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Inorganic Contract Compliance Screening System (ICCSS) Software for the PC (Version 3/90) User Manual

Viar and Co., Alexandria, VA

Prepared for:

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INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM

Software for the PC (Version 3/90)

USER MANUAL

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Viar &company

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This document is the user manual for Inorganic Contract Compliance Screening System (ICCSS) software. ICCSS software is a version of a mainframe-based application developed for the U.S. Environmental Protection Agency's National Contract Laboratory Program (CLP). ICCSS is designed to automate the determination of contractual compliance and completeness of data submitted to EPA under the Routine Analytical Services (RAS) programs of CERCLA (Comprehensive Emergency Response Clean-up and Liability Act) and SARA (Superfund Amendments and Reauthorization Act). In order to remain consistent with the mainframe system this PC version of ICCSS is written in SAS, and requires that SAS/PC be installed on the host PC. It will load analytical data from diskettes into SAS file format, perform technical edits on the data, produce technical defect and summary reports, and reproduce forms which show defects. In addition, ICCSS includes software to detect critical structural defects in the data format, to assist in identifying these for correction prior to preforming technical edits. The 2/90 version of ICCSS software is applicable to structural and technical checking of diskette data in either format A or B for Organics analysis under the CLP RAS 2/88 Statement of Work (SOW).

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INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM (ICCSS) SOFTWARE FOR THE PC (VERSION 3/90)

USER MANUAL

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DISCLAIMER

This documentation is for the Inorganic Contract Compliance Screening System (ICCSS) software release version 3/90. The ICCSS materials in this release have been designed to assess data delivered under the CLP Routine Analytical Services Statement of Work 7/88 for Multi-Media Multi-Concentration Inorganics Analysis. ICCSS software has been written assuming the above Statement of Work (SOW) specifications. This software will produce ambiguous results if data field and format specifications of the SOW are not exactly followed.

The Inorganic Contract Compliance Screening System software is provided without guarantee or warranty of any kind, expressed or implied. The Contract Laboratory Program (CLP), U.S. Environmental Protection Agency (USEPA), and Viar and Company will not be liable for any damages, losses, or claims consequent to use, modification, or interpretation of this software. There is no guarantee or warranty, expressed or implied, that this software will generate reports that will be acceptable to the recipient.

Questions regarding this release of Inrganic Contract Compliance Screening System software should be directed to CCS System Software Problem Registration at 703/684-5678.

I. WHAT IS INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM SOFTWARE?

The Inorganic Contract Compliance Screening System (ICCSS) software is a version of a mainframe-based application developed by Viar and Company for the U.S. Environmental Protection Agency's National Contract Laboratory Program (CLP). ICCSS is designed to automate the determination of contractual compliance and completeness of data submitted to EPA under the Routine Analytical Services (RAS) programs of CERCLA (Comprehensive Emergency Response Cleanup and Liability Act) and SARA (Superfund Amendments and Reauthorization Act).

This PC version of ICCSS will load analytical data from diskettes into SAS® file format, perform technical edits on the data, produce technical defect reports and summary reports, and reproduce forms which contain defects. In addition, ICCSS includes software to detect critical structural defects in the data format, to assist in identifying these for correction prior to performing technical edits.

The 3/90 version of ICCSS software is applicable to structural and technical checking of diskette data in Format A for Inorganics Analysis under the CLP RAS 7/88 Statement of Work (SOW).

II. USING THIS MANUAL

This manual provides the user with instructions for running ICCSS software on the PC. Descriptions of and instructions for each menu are detailed in the following sections. The user should have a working knowledge of PC DOS prior to utilizing this system.

The following sections present the ICCSS operating environment, describe system output (reports), provide instructions for running the system and generating reports, and specify input data requirements. Examples of reports are contained in Appendix A. Appendix B contains descriptions of report defect codes and text. Appendix C is a listing of defect statements by criterion with associated SOW references. Data Format A from the Inorganic RAS SOW (7/88) is included as Appendix D.

Since ICCSS PC software is implemented using Base SAS® Software, the "SAS® LANGUAGE GUIDE for Personal Computers" from The SAS Institute, Inc. in Cary, North Carolina may be helpful.

III. ICCSS OPERATING ENVIRONMENT FOR THE PC

Hardware

- o IBM AT/PS2-compatible PC
- o 2 megabytes of RAM with memory over 640K configured as expanded memory
- o Hard disk with at least 10 megabytes of available space
- o Printer with wide carriage or ability to compress print

NOTE: This application requires a minimum of 585K base memory. Other software which are memory resident will use up base memory and should not be on the same machine as ICCSS. TOTAL MEMORY FREE can be checked by running CHKDSK from DOS. The last line of the CHKDSK output (BYTES FREE) must be greater than or equal to 585,000 or ICCSS will not be able to run.

Software

- o DOS Version 3.3
- o CONFIG.SYS file containing the following lines: FILES=50 and BUFFERS=15
- o Base SAS® Software installed on the C: drive in a subdirectory named C:\SAS\. The following line must be inserted at the end of the CONFIG.SAS file in the SAS subdirectory: -EMS ALL

ICCSS Performance Considerations

The ICCS system software is a direct conversion of a large mainframe application to run on a PC. For this reason, operating the system efficiently requires a powerful PC. The performance of the software will depend heavily on the hardware used. System tests were run using an IBM AT-compatible PC running at 25 MHz with an 80386 CPU and a 28 millisecond access time disk. This is a very powerful configuration. With this equipment, the time for processing a typical diskette was as follows:

Structural Edits	Technical Edits
16 minutes	45 minutes

Using the software on a less powerful hardware configuration will increase the processing time correspondingly. In addition, the actual time for processing a particular set of data will vary with the size of the data files and with the number of defects found.

NOTE: This application has been tested on the above-described hardware/software configuration only. It is not known if it will run on other configurations, such as a LAN or LAPTOP computer.

IV. ICCS SYSTEM OUTPUT

Structural Defect Reports

The Structural Defect Reports evaluate various elements of diskette file configuration which might render portions of the diskette data ambiguous. These reports show basic structural problems with the files and data that should be corrected before the Technical Defect Reports are run.

There are two types of Structural Defect Reports.

Report #1: Records with Invalid Fields — displays all records with invalid key fields (e.g., FORM, SUFFIX and RECORD TYPE), and all records with discrepant Case, Lab, Contract, and SDG Number. Provides a listing of any forms that are missing and displays header records (record type H1 or H2) with invalid fields or shifted data.

Report #2: Record Type and Suffix Discrepancies - displays detail records (record type D1 or D2) with invalid fields or shifted data.

NOTE: The Structural Defect Reports will print only if there are structural defects present on the data diskette.

Technical Defect Report Package

The Technical Defect Reports apply to data accuracy and validation criteria contractually specified for CLP Routine Analytical Services analyses. Each data reporting form is checked for completeness and data accuracy; and data values are checked to determine if they are within contract limits and ranges.

The Technical Defect Report package consists of a series of tools to aid in checking a data package.

Screening Package Summary Information - provides at-a-glance identification of the ICCS screening package. Lists SDG number, Case number, laboratory name, contract number, EPA Region, data receipt date, and data format.

Structural Defect Frequency Report - a statistical summary of the two Structural Defect Reports, which lists each type of structural defect found in the package, its associated defect code, and the number of instances that it appears. Provides a percentage comparison of each structural defect to the number of all structural defects in the package. NOTE: This report will print only if there are structural defects present on the data diskette.

Defect Count by Sample and Form - summarizes, by sample and form, the numbers of defects present on the data diskette, and specifies the number of technical noncompliances found on each form.

Screening Summary Report - summarizes, by sample and criterion, the flags placed on each sample on the data diskette.

Technical Defect Frequency Report - lists each technical noncompliance found in the package, its associated defect code, and the number of instances that it appears. Provides a percentage comparison of each defect to the number of all the defects in the package.

Textual Defect Report - an easy-to-read textual listing of the defects found on the data diskette, organized by criterion, form, and defect. Consists of four categories of information:

- o Criterion and form affected are highlighted in a starred box to facilitate locating the noncompliance.
- o Textual explanation of the criterion with which the noncompliance is associated, along with the SOW reference (see Appendix C-Listing of Defect Statements).
- o Detail of the suffix, element, sample number, method, matrix, reported value from the data diskette (if applicable), and compared value as calculated by the CCS programs (if applicable).
- o Defect code that is associated with the textual defect message (see Appendix B-Report Code Tables).

Forms from Diskette - all data forms from the diskette printed in hardcopy.

V. INSTALLING ICCS SYSTEM SOFTWARE ON YOUR PC

Before you can load ICCS system software on your PC, you must have a copy of Base SAS® Software installed. The SAS® system software must be on the C: drive in a directory called C:\SAS.

When the Base SAS® Software has been successfully installed, use the following steps to load the ICCSS software.

Step 1: Insert ICCSS software diskette into the appropriate drive.

(1) ICCSS software is provided on a 5 1/4" high density floppy diskette and must be inserted into a 5 1/4" high density drive.

Step 2: Type **A:INORINST** and press **ENTER** to execute the system loading procedure. The system install screen will appear.

SYSTEM INSTALL SCREEN

```
                USEPA SAMPLE MANAGEMENT OFFICE
        INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
                        VERSION 3/90


THIS BATCH UTILITY PROGRAM WILL INSTALL INORGANIC CONTRACT
COMPLIANCE SCREENING SYSTEM SOFTWARE ON YOUR PC.  BEFORE
THIS SOFTWARE CAN BE INSTALLED, YOU MUST HAVE A COPY OF BAS
SAS SOFTWARE INSTALLED ON YOUR PC IN A DIRECTORY NAMED \SAS.


                           DISCLAIMER

CONTRACT COMPLIANCE SCREENING SOFTWARE AND DOCUMENTATION ARE
PROVIDED "AS IS" WITHOUT GUARANTEE OR WARRANTY OF ANY KIND,
EXPRESSED OR IMPLIED.  THE CONTRACT LABORATORY PROGRAM, U.S.
ENVIRONMENTAL PROTECTION AGENCY, AND VIAR AND COMPANY WILL NOT
BE LIABLE FOR ANY DAMAGES, LOSSES, OR CLAIMS CONSEQUENT TO USE
OF THIS SOFTWARE.

Strike a key when ready . . .
```

(1) If the high density drive being used is named other than A, use that identifier in Step 2 (e.g., D:INORINST).

The **INORINST** procedure installs the ICCS system software on the PC and returns to DOS. After the ICCSS software has been successfully installed on your PC, the following installation confirmation screen will be displayed.

INSTALLATION CONFIRMATION SCREEN

```
            USEPA SAMPLE MANAGEMENT OFFICE
      INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
                      VERSION 3/90


CONTRACT COMPLIANCE SCREENING SOFTWARE HAS NOW BEEN
INSTALLED ON THIS PC.

SEE THE ACCOMPANYING USERS GUIDE FOR DETAILS ON RUNNING
CONTRACT COMPLIANCE SCREENING PROGRAMS.


*  IF YOU HAVE ANY QUESTIONS PLEASE FEEL FREE TO CALL:

        VIAR AND COMPANY
        SAMPLE MANAGEMENT OFFICE
        CCS SOFTWARE PROBLEM REGISTRATION
        300 N. LEE STREET, SUITE 200
        ALEXANDRIA, VIRGINIA 22314
        703 684-5678

C:\>
```

(1) If Base SAS® Software is not properly installed on the PC, the system will display the following error screen and return to DOS. Begin again at Step 2.

INSTALLATION ERROR SCREEN

```
            USEPA SAMPLE MANAGEMENT OFFICE
      INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
                      VERSION 3/90


ATTENTION!

BASE SAS SOFTWARE HAS NOT BEEN INSTALLED ON T  S PC
OR IT IS INSTALLED IMPROPERLY.  SAS MUST BE I STALLED
IN A \SAS DIRECTORY.

PLEASE INSTALL BASE SAS SOFTWARE BEFORE TRYING TO
INSTALL CONTRACT COMPLIANCE SCREENING SOFTWARE.


C:\>
```

VI. NAVIGATING THE ICCS SYSTEM

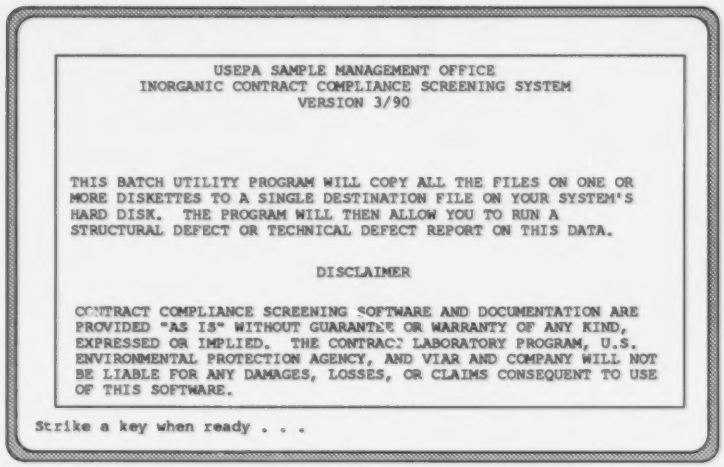
This section provides detailed step-by-step instructions for accessing and navigating the ICCS system on your PC. *Italicized* comments provide rationale or additional explanation for the step instructions.

To invoke and operate the ICCS system, use the following steps.

Step 1: At the C:\> prompt, type **ICCSS**. The following welcome screen will appear.

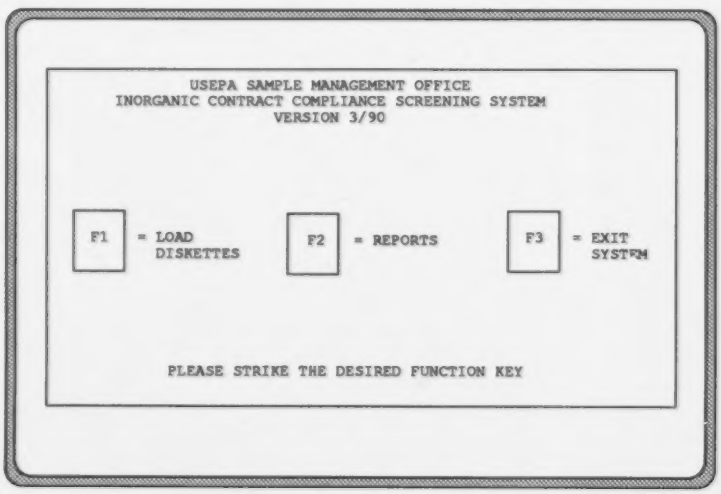
(1) When you are in DOS, the C:\> prompt will be on the screen.

WELCOME SCREEN


USEPA SAMPLE MANAGEMENT OFFICE
INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
VERSION 3/90
THIS BATCH UTILITY PROGRAM WILL COPY ALL THE FILES ON ONE OR MORE DISKETTES TO A SINGLE DESTINATION FILE ON YOUR SYSTEM'S HARD DISK. THE PROGRAM WILL THEN ALLOW YOU TO RUN A STRUCTURAL DEFECT OR TECHNICAL DEFECT REPORT ON THIS DATA.
DISCLAIMER
CONTRACT COMPLIANCE SCREENING SOFTWARE AND DOCUMENTATION ARE PROVIDED "AS IS" WITHOUT GUARANTEE OR WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED. THE CONTRACT LABORATORY PROGRAM, U.S. ENVIRONMENTAL PROTECTION AGENCY, AND VIAR AND COMPANY WILL NOT BE LIABLE FOR ANY DAMAGES, LOSSES, OR CLAIMS CONSEQUENT TO USE OF THIS SOFTWARE.
Strike a key when ready . . .

Step 2: Press any key to display the function selection menu screen shown below.

FUNCTION SELECTION MENU SCREEN

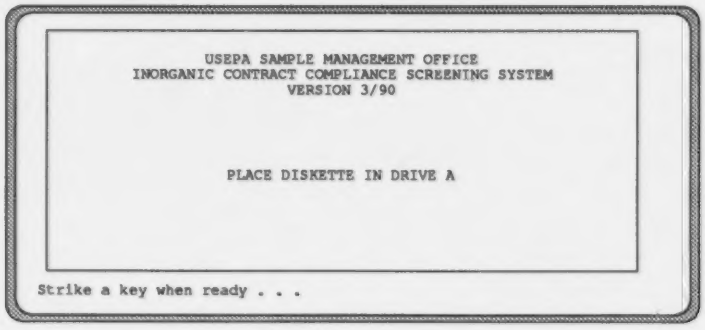

USEPA SAMPLE MANAGEMENT OFFICE
INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
VERSION 3/90
F1 = LOAD DISKETTES
F2 = REPORTS
F3 = EXIT SYSTEM
PLEASE STRIKE THE DESIRED FUNCTION KEY

Step 3: Press the **F1** function key to display the diskette loading screen shown below. If the diskette has already been loaded into a SAS file, press the **F2** function key and proceed to Step 6.

*(1) Upon pressing the **F2** function key, the Report Selection Menu Screen shown in Step 5 will appear.*

*(2) Pressing **F3** will allow the user to exit the system at this point.*

DISKETTE LOADING SCREEN

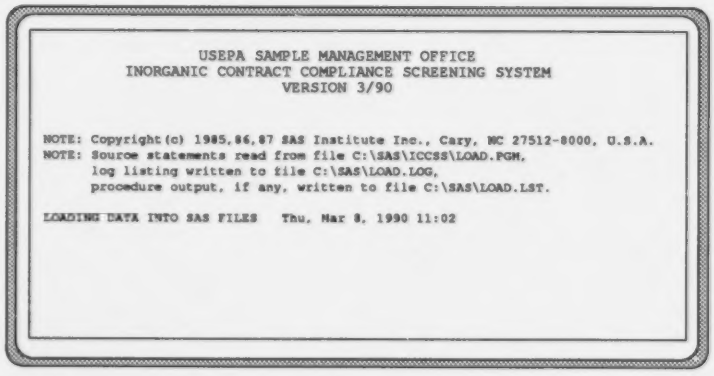

USEPA SAMPLE MANAGEMENT OFFICE
INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
VERSION 3/90
PLACE DISKETTE IN DRIVE A
Strike a key when ready . . .

Step 4: Insert the data diskette into the high-density drive and press any key. All files with valid names (i.e., contract-specified names) will be copied to the hard disk.

(1) As files are copied from the data diskette to the hard drive, the file names will appear on the screen.

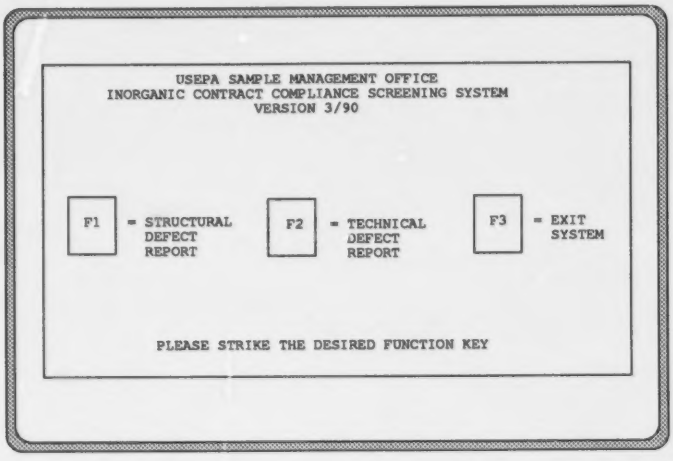
Step 5: After all diskette files are copied to the hard disk, remove the diskette from the drive and press any key to continue loading. The screen shown below will be displayed while the system is executing the load.

LOAD EXECUTION STATEMENTS


USEPA SAMPLE MANAGEMENT OFFICE
INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
VERSION 3/90
NOTE: Copyright (c) 1985,86,87 SAS Institute Inc., Cary, NC 27512-8000, U.S.A.
NOTE: Source statements read from file C:\SAS\ICCSS\LOAD.PGM,
log listing written to file C:\SAS\LOAD.LOG,
procedure output, if any, written to file C:\SAS\LOAD.LST.
LOADING DATA INTO SAS FILES Thu, Mar 8, 1990 11:02

When diskette loading is complete, the following report selection menu screen will be displayed.

REPORT SELECTION MENU SCREEN

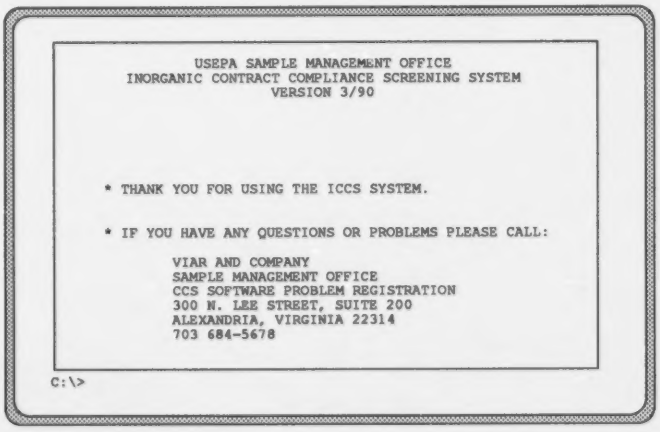


Step 6: Press the **F1** function key to run the Structural Defect Report or press the **F2** function key to run the Technical Defect Report.

(1) Detailed instructions for running reports are contained in Section VII-Running ICCSS Reports.

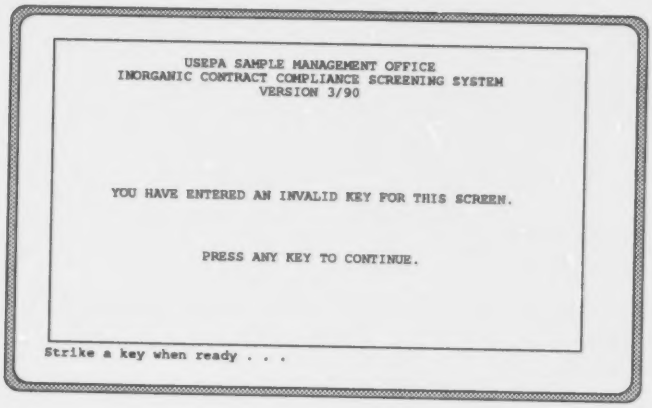
Step 7: When all desired reports have been run, press the **F3** function key to exit the system. The system will display the following exit screen and return control to DOS.

EXIT SCREEN


USEPA SAMPLE MANAGEMENT OFFICE
INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
VERSION 3/90
* THANK YOU FOR USING THE ICCS SYSTEM.
* IF YOU HAVE ANY QUESTIONS OR PROBLEMS PLEASE CALL:
VIAR AND COMPANY
SAMPLE MANAGEMENT OFFICE
CCS SOFTWARE PROBLEM REGISTRATION
300 N. LEE STREET, SUITE 200
ALEXANDRIA, VIRGINIA 22314
703 684-5678
C:\>

(1) If an invalid key is pressed, i.e. one which is not on the displayed menu, the following error screen is displayed.

REPORT SELECTION ERROR SCREEN


USEPA SAMPLE MANAGEMENT OFFICE
INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
VERSION 3/90
YOU HAVE ENTERED AN INVALID KEY FOR THIS SCREEN.
PRESS ANY KEY TO CONTINUE.
Strike a key when ready . . .

If this screen appears, press any key to return to the Report Selection Menu Screen and begin again at Step 6.

VII. RUNNING ICCSS REPORTS

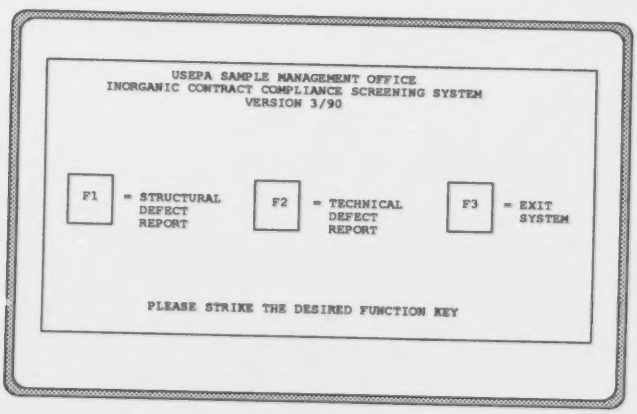
This section provides detailed step-by-step instructions for running ICCSS reports on your PC. *Italicized* comments provide rationale or additional explanation for the step instructions.

The Structural Defect Reports should be run first since these reports identify basic structural problems with the files and data that may cause ambiguities in the Technical Defect Reports. IMPORTANT: Any problems shown in the Structural Defect Reports must be corrected before the Technical Defect Report Package is executed, to avoid ambiguities in the Technical Defect Report.

To generate ICCSS reports, use the following steps.

Step 1: Invoke the ICCS system and load the data diskette per Steps 1-5 given in Section VI- Navigating the ICCS System. The Report Selection Menu will now be on the screen.

REPORT SELECTION MENU SCREEN


USEPA SAMPLE MANAGEMENT OFFICE
INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
VERSION 3/90
F1 = STRUCTURAL DEFECT REPORT
F2 = TECHNICAL DEFECT REPORT
F3 = EXIT SYSTEM
PLEASE STRIKE THE DESIRED FUNCTION KEY

Step 2: To run the **Structural Defect Reports** from the Report Selection Menu, press the **F1** function key. The following statements will be displayed while the system is executing the program.

STRUCTURAL DEFECT REPORT EXECUTION STATEMENTS

```
                    USEPA SAMPLE MANAGEMENT OFFICE
                INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
                              VERSION 3/90


NOTE: Copyright(c) 1985,86,87 SAS Institute Inc., Cary, NC 27512-8000, U.S.A.
NOTE: Source statements read from file C:\SAS\ICCSS\STRUCTUR.PGM,
      log listing written to file C:\SAS\STRUCTUR.LOG,
      procedure output, if any, written to file C:\SAS\STRUCTUR.LST.

PROCESSING STRUCTURAL DEFECT REPORT    Thu, Mar 8, 1990  11:16
```

The defect reports will be printed to your printer. When the reports are completed, the ICCS system will return to the Report Selection Menu. Here, you may again select either type of report or exit the system.

(1) If there are no structural defects found on the diskette, the printer will generate a message "NO DEFECTS FOUND FOR STRUCTURAL REPORT # 1 (or #2) " and the reports will not be generated. The ICCS system will return to the Report Selection Menu.

Step 3: To run the **Technical Defect Report** package from the Report Selection Menu, press the **F2** function key. The following statements will be displayed as each part of the system executes.

TECHNICAL DEFECT REPORT EXECUTION STATEMENTS

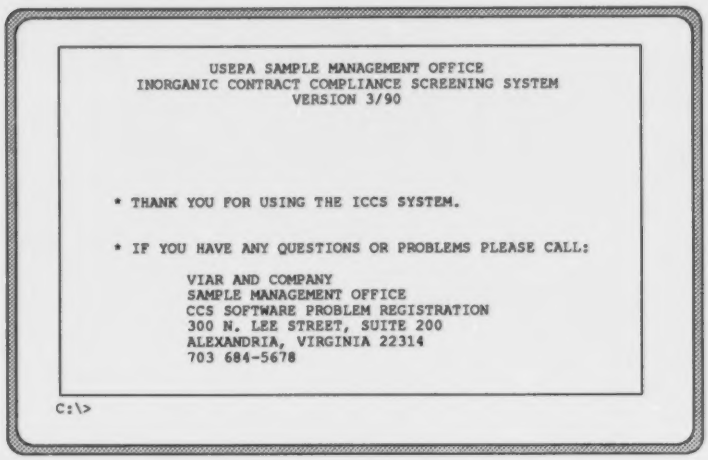
```
                    USEPA SAMPLE MANAGEMENT OFFICE
                INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
                              VERSION 3/90


NOTE: Copyright(c) 1985,86,87 SAS Institute Inc., Cary, NC  27512-8000, U.S.A.
NOTE: Source statements read from file C:\SAS\ICCSS\EDIT.PGM,
      log listing written to file C:\SAS\EDIT.LOG,
      procedure output, if any, written to file C:\SAS\EDIT.LST.

PROCESSING EDIT                    Thu, Mar 8, 1990   11:35
PROCESSING COVER SUMMARY           Thu, Mar 8, 1990   11:37
PROCESSING EDITS788                Thu, Mar 8, 1990   11:38
PROCESSING COVER PAGE EDIT         Thu, Mar 8, 1990   11:38
PROCESSING FORM 13 EDIT            Thu, Mar 8, 1990   11:39
PROCESSING FORM 14 EDIT            Thu, Mar 8, 1990   11:40
PROCESSING FORM 10 EDIT            Thu, Mar 8, 1990   11:49
PROCESSING FORM 12 EDIT            Thu, Mar 8, 1990   11:50
PROCESSING FORM 1 EDIT             Thu, Mar 8, 1990   11:51
PROCESSING FORM 2A EDIT            Thu, Mar 8, 1990   11:54
PROCESSING FORM 2B EDIT            Thu, Mar 8, 1990   11:57
PROCESSING FORM 3 EDIT             Thu, Mar 8, 1990   11:59
PROCESSING FORM 4 EDIT             Thu, Mar 8, 1990   12:01
PROCESSING FORM 5A EDIT            Thu, Mar 8, 1990   12:03
PROCESSING FORM 5B EDIT            Thu, Mar 8, 1990   12:07
PROCESSING FORM 6 EDIT             Thu, Mar 8, 1990   12:08
PROCESSING FORM 7 EDIT             Thu, Mar 8, 1990   12:12
PROCESSING FORM 8 EDIT             Thu, Mar 8, 1990   12:14
PROCESSING FORM 9 EDIT             Thu, Mar 8, 1990   12:17
PROCESSING FORM 11 EDIT            Thu, Mar 8, 1990   12:18
```

(1) This procedure consists of several steps. An edit program is run for each of the 14 inorganic data forms. After the edit programs are completed, an error consolidation program is run and the defect reports are generated.

The Technical Defect Reports will be directed to the printer. When the reports are completed, the ICCS system will return to the Report Selection Menu. Here, you may again select either type of report or exit the system.

Step 4: When all desired reports have been run, press the **F3** function key to exit the system. The system will display the following exit screen and return control to DOS.

EXIT SCREEN


USEPA SAMPLE MANAGEMENT OFFICE
INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM
VERSION 3/90
* THANK YOU FOR USING THE ICCS SYSTEM.
* IF YOU HAVE ANY QUESTIONS OR PROBLEMS PLEASE CALL:
VIAR AND COMPANY
SAMPLE MANAGEMENT OFFICE
CCS SOFTWARE PROBLEM REGISTRATION
300 N. LEE STREET, SUITE 200
ALEXANDRIA, VIRGINIA 22314
703 684-5678
C:\>

VIII. INPUT DATA REQUIREMENTS

Among other items, ICCSS software has been written assuming the following Statement of Work specifications. Any other interpretation of SOW specifications by a user of this software invalidates the use of this software.

Data Field Justification

This software will produce ambiguous results if all data fields are not properly justified (i.e., numeric fields right justified and character fields left justified).

Appendix A
EXAMPLES OF REPORTS

EXAMPLE OF

STRUCTURAL DEFECT REPORTS

U.S.E.P.A. CONTRACT LABORATORY PROGRAM

SAMPLE MANAGEMENT OFFICE

INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM

STRUCTURAL DEFECT FREQUENCY REPORT

STRUCTURAL DEFECT REPORT (#1)
RECORDS WITH INVALID FIELDS

LAB: SDG:

RELATIVE FILE POSITION: RECORD # 512

```
V(1) AADAL          5228.2349     4192.6597                NR
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+----9----+----100
.....................................................II.................................
```

CODE	PROBLEM	CURRENT VALUE	CORRECT VALUE
I	INVALID METHOD (M)	R	P/A/F/CV/T/AS/C

RELATIVE FILE POSITION: RECORD # 513

```
V(1) AADSB75-125       81.5972        6.5421U    116.82   69.8NP
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+----9----+----100
.....................................................GGGGGGGH.................................
```

CODE	PROBLEM	CURRENT VALUE	CORRECT VALUE
G	INVALID PERCENT RECOVERED	69.8N	
H	INVALID QUALIFIER (Q)	P	N/BLANK

RELATIVE FILE POSITION: RECORD # 514

```
V(1) AADAS75-125       14.7196        7.9439       9.35   72.5NF
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+----9----+----100
.....................................................GGGGGGGH.................................
```

CODE	PROBLEM	CURRENT VALUE	CORRECT VALUE
G	INVALID PERCENT RECOVERED	72.5N	
H	INVALID QUALIFIER (Q)	F	N/BLANK

U.S.E.P.A. CONTRACT LABORATORY PROGRAM

SAMPLE MANAGEMENT OFFICE

INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM

STRUCTURAL DEFECT FREQUENCY REPORT

STRUCTURAL DEFECT REPORT (#2)
RECORD TYPE AND SUFFIX DISCREPANCIES

FORM	SUFFIX	RECORD TYPE	ERROR	CURRENT VALUE	CORRECT VALUE
XI(2)	AB	H	FIRST SUFFIX RECORD FOR FORM NE TO AA		

EXAMPLE OF

TECHNICAL DEFECT REPORT PACKAGE

U.S.E.P.A. CONTRACT LABORATORY PROGRAM

SAMPLE MANAGEMENT OFFICE

INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM

SCREENING PACKAGE
SUMMARY INFORMATION

SDG:

CASE:

LAB:

CONTRACT:

REGION: 7

DRD: 01/12/90

FORMAT: A

SCREEN DATE: _____

MAIL DATE: _____

SCREENER: _____

U.S.E.P.A. CONTRACT LABORATORY PROGRAM

SAMPLE MANAGEMENT OFFICE

INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM

STRUCTURAL DEFECT FREQUENCY REPORT

DEFECT CODE	NUMBER OF DEFECTS	PERCENT OF TOTAL DEFECTS	DEFECT MESSAGE
5210	19	55.88	INVALID QUALIFIER (Q)
5215	8	23.53	INVALID METHOD (M)
5420	5	14.71	INVALID PERCENT RECOVERED
5030	1	2.94	FIRST SUFFIX RECORD FOR FORM NE TO AA
5415	1	2.94	INVALID SPIKE ADDED
	==	=====	
	34	100	

U.S.E.P.A. CONTRACT LABORATORY PROGRAM

SAMPLE MANAGEMENT OFFICE

INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM

DEFECT COUNT BY SAMPLE AND FORM

SDG NUMBER: LABORATORY: CASE NUMBER:

SAMPLE NO.	A COVER PAGE	B FORM 1	CA FORM 2A	CB FORM 2B	D FORM 3	E FORM 4	FA FORM 5A	FB FORM 5B	G FORM 6	H FORM 7	I FORM 8	J FORM 9	L FORM 10	M FORM 11	N FORM 12	R FORM 13	RA FORM 14
			22		3					2			14	19	19	4	15
		18	22		3					2	2		14	19	19	4	15
			22		3		25			2			14	19	19	4	15
			22		3				2	2			14	19	19	4	15
		16	22		3					2			14	19	19	4	15
		16	22		3					2			14	19	19	4	15
		18	22		3					2	1		14	19	19	4	15
		16	22		3					2			14	19	19	4	15
		16	22		3					2			14	19	19	4	15

U.S.E.P.A. CONTRACT LABORATORY PROGRAM

SAMPLE MANAGEMENT OFFICE

INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM

TECHNICAL DEFECT FREQUENCY REPORT

DEFECT CODE	NUMBER OF DEFECTS	PERCENT OF TOTAL DEFECTS	DEFECT MESSAGE
231	100	39.84	CONC. IS NOT TO THE REQUIRED SIG. FIG.
722	19	7.57	MISSING SAMPLE & SPIKE FOR METHOD USED
1405	19	7.57	WAVELENGTH IS MISSING
1512	19	7.57	LINEAR RANGE NOT REPORTED FOR ICP ID
701	17	6.77	METHOD OF ANALYSIS IS MISSING
316	12	4.78	CCV TRUE VALUE NOT REPORTED TO 1 DECIMAL
317	8	3.19	CCV FOUND VALUE NOT REPOTED TO 2 DEC
702	8	3.19	METHOD OF ANALYSIS IS INCORRECT
1317	5	1.99	NO IDL CORRESPONDING TO INSTRUMENT USED
1714	5	1.99	HOLDING TIME IS EXCEEDED
815	4	1.59	POST SPIKE IS NOT REQUIRED
1304	4	1.59	IDL IS NOT REPORTED TO ONE DECIMAL PLACE
1305	4	1.59	IDL IS NOT REPORTED TO A WHOLE NUMBER
1719	4	1.59	RECOVERY IS MISSING
1601	3	1.20	EPA SAMPLES NOT IN ALPHANUMERIC ORDER
324	2	0.80	CCVS ON FORMS 14 & 2A DO NOT CORRESPOND
519	2	0.80	CCBS ON FORMS 14 & 3 DO NOT CORRESPOND
1128	2	0.80	REPORTED (R) VALUE IS INCORRECT
526	1	0.40	SOIL PB ON FORMS 14&3 DO NOT CORRESPOND
927	1	0.40	INCORRECT FORMAT FOR LIMIT-NUMERIC 5.1
939	1	0.40	INCORRECT CONTROL LIMIT
1005	1	0.40	DISCREPANT LCS ON FORMS 7 & 14
1028	1	0.40	INCORRECT SOLID LCS % RECOVERY
1130	1	0.40	(Q) QUALIFIER IS MISSING
1314	1	0.40	FURNACE ID NUMBER IS MISSING
1614	1	0.40	WET WEIGHT NOT FORMATTED TO TWO DECIMAL
1715	1	0.40	SAMPLE WAS NOT RUN INITIALLY UNDILUTED
1717	1	0.40	ANALYTICAL SPIKE IS NOT PERFORMED
1718	1	0.40	SPIKE IS NOT AT THE SAME DILUTION
1720	1	0.40	MSA TREE IS NOT FOLLOWED CORRECTLY
1736	1	0.40	ICB WAS NOT PERFORMED AFTER CALIBRATION
1754	1	0.40	MISSING BLANK STANDARD
	===	=====	
	251	100	

CONTRACT COMPLIANCE SCREENING SUMMARY FOR INORGANICS

CASE: SAMPLES: 6 DATE MAILED:

LAB CODE: CONTRACT: SCREENER: DATE SCREENED:

SDG NUMBER: REGION: 5 DATE RECEIVED: 02/01/90

SAMPLE NO.	A COVER PAGE	B DATA SHEET	CA CALIBRATION ICV/CCV	CB CRDL	D BLANK	E ICS	FA SPIKES PRE.	FB POST	G DUP.	H LCS	I MSA	J SER. DIL.	KA HOLDING HG	KB TIME CN	L IDL	M CORR. FACTR	N LIN. RANGE	R RAW DATA	T TR	DI-SK
			R		R					R					R	R	R	R		
		R	R		R					R	R				R	R	R	R		
			R		R		R			R					R	R	R	R		
			R		R				R	R					R	R	R	R		
		R	R		R					R					R	R	R	R		
		R	R		R					R					R	R	R	R		
		R	R		R					R	R				R	R	R	R		
		R	R		R					R					R	R	R	R		
		R	R		R					R					R	R	R	R		

PROBLEM CODE: E = EXPLAIN, R = RESUBMIT, S = SUBMIT, N = NONCOMPLIANT

U.S.E.P.A. CONTRACT LABORATORY PROGRAM

SAMPLE MANAGEMENT OFFICE

INORGANIC CONTRACT COMPLIANCE SCREENING SYSTEM

TEXTUAL DEFECT REPORT

****
* Criterion G. Form 6. *
****

Control limit is not reported to one decimal place. (B27)

SUFFIX	ELEMENT	SAMPLE	METHOD	MATRIX	REPORTED VALUE	COMPARED VALUE
AA	CA		P	SOIL	5	NUMERIC 5.1

ERROR CODE : 927

Control limit is incorrect. (B27)

SUFFIX	ELEMENT	SAMPLE	METHOD	MATRIX	REPORTED VALUE	COMPARED VALUE
AA	CA		P	SOIL	1168	1168.2

ERROR CODE : 939

****
* Criterion H. Form 7. *
****

No. of LCS' on Forms 7 and 14 do not correspond for the element. (B29)

SUFFIX	ELEMENT	SAMPLE	METHOD	MATRIX	REPORTED VALUE	COMPARED VALUE
	HG			SOIL	1	0

ERROR CODE : 1005

Solid LCS %R is incorrect. (B29)

SUFFIX	ELEMENT	SAMPLE	METHOD	MATRIX	REPORTED VALUE	COMPARED VALUE
AA	BA			SOIL	121.6	120.8

ERROR CODE : 1028

U.S. EPA - CLP
COVER PAGE - INORGANIC ANALYSIS DATA PACKAGE

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

SOW NO.: 7/88

EPA SAMPLE NO. LAB SAMPLE ID.

WERE ICP INTERELEMENT CORRECTION APPLIED? YES/NO YES

WERE ICP BACKGROUND CORRRECTIONS APPLIED? YES/NO YES
IF YES-WERE RAW DATA GENERATED BEFORE
APPLICATION OF BACKGROUND CORRECTIONS? YES/NO NO

COMMENTS:
DUE TO THE NATURE OF THESE SAMPLES THERE IS NO FURNACE DATA FOR
OR . ALSO, CYANIDE SAMPLES WERE DISTILLED AT REDUCED VOLUME AS
WELL AS FOR FURNACE AND ICP.

I CERTIFY THAT THIS DATA PACKAGE IS IN COMPLIANCE WITH THE TERMS AND CONDITIONS OF THE CONTRACT, BOTH TECHNICALLY AND FOR COMPLETENESS, FOR OTHER THAN THE CONDITIONS DETAILED ABOVE. RELEASE OF THE DATA CONTAINED IN THIS HARDCOPY DATA PACKAGE AND IN THE COMPUTER-READABLE DATA SUBMITTED ON FLOPPY DISKETTE HAS BEEN AUTHORIZED BY THE LABORATORY MANAGER OR THE MANAGER S DESIGNEE, AS VERIFIED BY THE FOLLOWING SIGNATURE.

SIGNATURE: _____ NAME: _____

DATE: _____ TITLE: _____

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

MATRIX (SOIL/WATER): WATER LAB SAMPLE ID:

LEVEL (LOW/MED): MED DATE RECEIVED: 12/13/89

% SOLIDS: 0.0

CONCENTRATION UNITS (UG/L OR MG/KG DRY WEIGHT): UG/L

CAS NO.	ANALYTE	CONCENTRATION	C	Q	M
7429-90-5	ALUMINUM	2960.00			P
7440-36-0	ANTIMONY	13.00	U		P
7440-38-2	ARSENIC				NR
7440-39-3	BARIUM	80.70	B		P
7440-41-7	BERYLLIUM	2.00	U		P
7440-43-9	CADMIUM	2.00	U		P
7440-70-2	CALCIUM	71600.00			P
7440-47-3	CHROMIUM	5.00	U		P
7440-48-4	COBALT	18.40	B		P
7440-50-8	COPPER	15.60	B		P
7439-89-6	IRON	33500.00			P
7439-92-1	LEAD				NR
7439-95-4	MAGNESIUM	21300.00			P
7439-96-5	MANGANESE	2000.00			P
7439-97-6	MERCURY	0.31		*	CV
7440-02-0	NICKEL	28.60	B		P
7440-09-7	POTASSIUM	3490.00	B		P
7782-49-2	SELENIUM				NR
7440-22-4	SILVER	5.50	B		P
7440-23-5	SODIUM	43600.00			P
7440-28-0	THALLIUM				NR
7440-62-2	VANADIUM	7.80	B		P
7440-66-6	ZINC	60.70			P
	CYANIDE	25.30		N	AS

COLOR BEFORE: BROWN CLARITY BEFORE: OPAQUE TEXTURE:

COLOR AFTER: BROWN CLARITY AFTER: OPAQUE ARTIFACTS:

COMMENTS :

OILY; DUE TO THE NATURE OF THE SAMPLE THERE IS NO FURNACE DIGESTION OR ANALYSIS FOR THE SAMPLE OR DUPLICATE. AFTER THE HG AND ICP PREPS THERE WAS NO SUITABLE SAMPLE LEFT OVER.

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

INITIAL CALIBRATION SOURCE: EPA-LV

CONTINUING CALIBRATION SOURCE:

CONCENTRATION UNITS: UG/L

	INITIAL CALIBRATION			CONTINUING CALIBRATION					
ANALYTE	TRUE	FOUND	%R(1)	TRUE	FOUND	%R(1)	FOUND	%R(1)	M
ALUMINUM	2000.0	2093.90	104.7	25000.0	23889.00	95.6	23874.00	95.5	P
ANTIMONY	1010.0	956.30	94.7	2500.0	2370.50	94.8	2393.40	95.7	P
ARSENIC	47.0	45.49	96.8	50.0	48.54	97.1	50.37	100.7	F
BARIUM	2010.0	2009.50	100.0	2500.0	2370.30	94.8	2377.50	95.1	P
BERYLLIUM	501.0	488.42	97.5	500.0	477.50	95.5	482.30	96.5	P
CADMIUM	492.0	511.08	103.9	2500.0	2291.60	91.7	2328.30	93.1	P
CALCIUM	50200.0	52550.00	104.7	25000.0	23925.00	95.7	24229.00	96.9	P
CHROMIUM	503.0	529.31	105.2	2500.0	2332.20	93.3	2355.30	94.2	P
COBALT	498.0	506.89	101.8	2500.0	2287.10	91.5	2313.20	92.5	P
COPPER	520.0	515.94	99.2	2500.0	2305.90	92.2	2312.80	92.5	P
IRON	2080.0	2081.80	100.1	10000.0	9796.80	98.0	9998.40	100.0	P
LEAD	97.9	99.71	101.8	50.0	52.85	105.7	51.53	103.1	F
MAGNESIUM	25700.0	25821.00	100.5	25000.0	23879.00	95.5	24107.00	96.4	P
MANGANESE	504.0	503.46	99.9	2500.0	2324.30	93.0	2351.60	94.1	P
MERCURY	5.0	5.02	100.4	2.0	1.94	97.0	1.66	83.0	CV
NICKEL	485.0	480.92	99.2	2500.0	2278.30	91.1	2304.40	92.2	P
POTASSIUM	50200.0	52060.00	103.7	25000.0	24024.00	96.1	24035.00	96.1	P
SELENIUM	104.0	99.58	95.8	50.0	47.88	95.8	49.72	99.4	F
SILVER	484.0	495.83	102.4	500.0	475.26	95.1	480.82	96.2	P
SODIUM	51500.0	51742.00	100.5	25000.0	24051.00	96.2	24206.00	96.8	P
THALLIUM	97.3	97.79	100.5	50.0	51.46	102.9	52.59	105.2	F
VANADIUM	505.0	513.56	101.7	2500.0	2338.50	93.5	2358.20	94.3	P
ZINC	2920.0	3104.90	106.3	2500.0	2320.30	92.8	2353.30	94.1	P
CYANIDE	105.0	109.55	104.3	200.0	214.62	107.3	212.32	106.2	AS

(1) CONTROL LIMITS: MERCURY 80-120; OTHER METALS 90-110; CYANIDE 85-115

U.S. E A - CLP

2B
CRDL STANDARD FOR AA AND ICP

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

AA CRDL STANDARD SOURCE:

ICP CRDL STANDARD SOURCE:

CONCENTRATION UNITS: UG/L

	CRDL STANDARD FOR AA			CRDL STANDARD FOR ICP				
					INITIAL		FINAL	
ANALYTE	TRUE	FOUND	%R	TRUE	FOUND	%R	FOUND	%R
ALUMINUM								
ANTIMONY				120.0	106.16	88.5	118.86	99.0
ARSENIC	10.0	9.13	91.3					
BARIUM								
BERYLLIUM				10.0	10.48	104.8	10.48	104.8
CADMIUM				10.0	10.29	102.9	10.42	104.2
CALCIUM								
CHROMIUM				20.0	18.68	93.4	20.78	103.9
COBALT				100.0	98.01	98.0	95.72	95.7
COPPER				50.0	47.70	95.4	47.70	95.4
IRON								
LEAD	3.0	4.28	142.7					
MAGNESIUM								
MANGANESE				30.0	30.86	102.9	30.86	102.9
MERCURY								
NICKEL				80.0	71.59	89.5	69.48	86.8
POTASSIUM								
SELENIUM	5.0	6.18	123.6					
SILVER				20.0	21.67	108.4	22.78	113.9
SODIUM								
THALLIUM	10.0	8.86	88.6					
VANADIUM				100.0	94.71	94.7	94.17	94.2
ZINC				40.0	34.95	87.4	34.39	86.0

U.S. EPA - CLP

3
BLANKS

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

PREPARATION BLANK MATRIX (SOIL/WATER): WATER

PREPARATION BLANK CONCENTRATION UNITS (UG/L OR MG/KG): UG/L

ANALYTE	INITIAL CALIB. BLANK (UG/L)	C	CONTINUING CALIBRATION BLANK (UG/L) 1	C	2	C	3	C	PREPARATION BLANK	C	M
ALUMINUM	22.0	U	22.0	U	22.0	U	22.0	U	22.000	U	P
ANTIMONY	13.0	U	13.0	U	13.0	U	13.0	U	13.000	U	P
ARSENIC	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
BARIUM	2.0	U	2.0	U	2.2	B	2.0	U	2.000	U	P
BERYLLIUM	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
CADMIUM	2.0	U	2.0	U	2.3	B	2.0	U	2.000	U	P
CALCIUM	30.0	U	30.0	U	39.4	B	30.0	U	45.300	B	P
CHROMIUM	5.0	U	5.0	U	5.0	U	5.0	U	5.000	U	P
COBALT	4.0	U	4.0	U	4.0	U	4.0	U	4.000	U	P
COPPER	6.0	U	6.0	U	6.0	U	6.0	U	6.000	U	P
IRON	6.0	U	6.0	U	24.7	B	6.0	U	6.000	U	P
LEAD	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
MAGNESIUM	37.0	U	37.0	U	37.0	U	37.0	U	37.000	U	P
MANGANESE	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
MERCURY	0.2	U	0.2	U	0.2	U	0.2	U	0.200	U	CV
NICKEL	5.0	U	5.0	U	5.0	U	5.0	U	5.500	B	P
POTASSIUM	391.0	U	391.0	U	391.0	U	391.0	U	391.000	U	P
SELENIUM	2.0	B	2.0	U	2.0	U	2.0	U	2.000	U	F
SILVER	4.0	U	4.0	U	4.4	B	5.6	B	4.400	B	P
SODIUM	84.0	U	84.0	U	84.0	U	84.0	U	84.000	U	P
THALLIUM	3.0	U	3.0	U	3.0	U	3.0	U	3.000	U	F
VANADIUM	4.0	U	4.0	U	4.0	U	4.0	U	4.000	U	P
ZINC	6.0	U	6.0	U	6.0	U	6.0	U	6.000	U	P
CYANIDE	20.0	U	20.0	U	20.0	U	20.0	U	10.000	U	AS

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

ICP ID NUMBER: P1 ICS SOURCE: QAL-0689

CONCENTRATION UNITS: UG/L

ANALYTE	TRUE SOL. A	TRUE SOL. AB	INITIAL FOUND SOL. A	INITIAL FOUND SOL. AB	INITIAL FOUND %R	FINAL FOUND SOL. A	FINAL FOUND SOL. AB	FINAL FOUND %R
ALUMINUM	482000	484000	450650	448460.0	92.7	443370	434960.0	89.9
ANTIMONY	0	0	0	9.5		16	32.9	
ARSENIC								
BARIUM	0	466	0	464.6	99.7	0	453.8	97.4
BERYLLIUM	0	472	0	430.8	91.3	0	418.1	88.6
CADMIUM	0	900	-11	834.5	92.7	-10	806.5	89.6
CALCIUM	460000	455000	421300	416070.0	91.4	409420	400430.0	88.0
CHROMIUM	53	532	48	501.6	94.3	49	492.2	92.5
COBALT	0	469	0	418.0	89.1	-1	403.5	86.0
COPPER	0	515	-31	452.4	87.8	-34	440.4	85.5
IRON	173000	172000	165130	164230.0	95.5	164060	161190.0	93.7
LEAD								
MAGNESIUM	444000	450000	451370	447420.0	99.4	443980	434550.0	96.6
MANGANESE	0	461	14	450.5	97.7	14	438.5	95.1
MERCURY								
NICKEL	0	892	-5	790.9	88.7	-5	771.1	86.4
POTASSIUM	0	0	85	27.0		54	34.7	
SELENIUM								
SILVER	0	1010	-7	891.4	88.3	-7	869.6	86.1
SODIUM	0	0	94	114.1		96	111.0	
THALLIUM								
VANADIUM	0	487	2	459.5	94.4	5	446.4	91.7
ZINC	0	976	-11	889.0	91.1	-12	863.4	88.5

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

MATRIX (SOIL/WATER): WATER LEVEL (LOW/MED): MED

% SOLIDS FOR SAMPLE: 0.0

CONCENTRATION UNITS (UG/L OR MG/KG DRY WEIGHT): UG/L

ANALYTE	CONTROL LIMIT %R	SPIKED SAMPLE RESULT (SSR)	C	SAMPLE RESULT (SR)	C	SPIKE ADDED (SA)	%R	Q	M
ALUMINUM		35878.0000		32055.0000		2000.00	191.2		P
ANTIMONY	75-125	478.3100		13.0000	U	500.00	95.7		P
ARSENIC	75-125	100.0000		85.0000		40.00	37.5	N	F
BARIUM	75-125	2050.5000		162.3800	B	2000.00	94.4		P
BERYLLIUM	75-125	48.9200		2.0000	U	50.00	97.8		P
CADMIUM	75-125	41.3200		2.0000	U	50.00	82.6		P
CALCIUM									NR
CHROMIUM	75-125	255.1600		63.2500		200.00	96.0		P
COBALT	75-125	539.8000		81.1500		500.00	91.7		P
COPPER	75-125	388.4500		154.0700		250.00	93.8		P
IRON		96378.0000		92134.0000		1000.00	424.4		P
LEAD		137.5000		124.1500		20.00	66.8		F
MAGNESIUM									NR
MANGANESE		6521.7000		6015.1000		500.00	101.3		P
MERCURY	75-125	1.0900		0.2430		1.00	84.7		CV
NICKEL	75-125	630.8400		176.4500		500.00	90.9		P
POTASSIUM									NR
SELENIUM	75-125	2.0000	U	10.0000	U	10.00	0.0	N	F
SILVER	75-125	47.9000		4.0000	U	50.00	95.8		P
SODIUM									NR
THALLIUM	75-125	31.1200		3.0000	U	50.00	62.2	N	F
VANADIUM	75-125	551.0100		74.9100		500.00	95.2		P
ZINC	75-125	769.0200		298.8500		500.00	94.0		P
CYANIDE	75-125	245.3589		22.2222	U	100.00	245.4	N	AS

COMMENTS:

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5B

POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

MATRIX (SOIL/WATER): WATER LEVEL (LOW/MED): MED

CONCENTRATION UNITS: UG/L

ANALYTE	CONTROL LIMIT %R	SPIKED SAMPLE RESULT (SSR)	C	SAMPLE RESULT (SR)	C	SPIKE ADDED (SA)	%R	Q	M
ALUMINUM									NR
ANTIMONY									NR
ARSENIC									NR
BARIUM									NR
BERYLLIUM									NR
CADMIUM									NR
CALCIUM									NR
CHROMIUM									NR
COBALT									NR
COPPER									NR
IRON									NR
LEAD									NR
MAGNESIUM									NR
MANGANESE									NR
MERCURY									NR
NICKEL									NR
POTASSIUM									NR
SELENIUM									NR
SILVER									NR
SODIUM									NR
THALLIUM									NR
VANADIUM									NR
ZINC									NR
CYANIDE		44.21		20.00	U	40.0	110.5		AS

COMMENTS:

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

MATRIX (SOIL/WATER): WATER LEVEL (LOW/MED): MED

% SOLIDS FOR SAMPLE: 0.0 % SOLIDS FOR DUPLICATE: 0.0

CONCENTRATION UNITS (UG/L OR MG/KG DRY WEIGHT): UG/L

ANALYTE	CONTROL LIMIT	SAMPLE (S)	C	DUPLICATE (D)	C	RPD	Q	M
ALUMINUM		2960.4000		2544.2000		15.1		P
ANTIMONY		13.0000	U	13.0000	U			P
ARSENIC								NR
BARIUM		80.7300	B	80.7300	B	0.0		P
BERYLLIUM		2.0000	U	2.0000	U			P
CADMIUM		2.0000	U	2.0000	U			P
CALCIUM		71580.0000		75365.0000		5.2		P
CHROMIUM		5.0000	U	5.0000	U			P
COBALT		18.3700	B	16.0700	B	13.4		P
COPPER		15.6100	B	8.1200	B	63.1		P
IRON		33482.0000		34429.0000		2.8		P
LEAD								NR
MAGNESIUM	5000.0	21256.0000		22175.0000		4.2		P
MANGANESE		2004.8000		2114.6000		5.3		P
MERCURY	0.2	0.3140		0.2000	U	200.0	*	CV
NICKEL		28.6300	B	25.2600	B	12.5		P
POTASSIUM		3487.6000	B	3711.4000	B	6.2		P
SELENIUM								NR
SILVER		5.4800	B	7.1700	B	26.7		P
SODIUM		43570.0000		45910.0000		5.2		P
THALLIUM								NR
VANADIUM		7.7800	B	7.4000	B	5.0		P
ZINC	20.0	60.7200		57.1000		6.1		P
CYANIDE								NR

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LABORATORY CONTROL SAMPLE

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

SOLID LCS SOURCE:

AQUEOUS LCS SOURCE:

ANALYTE	AQUEOUS (UG/L) TRUE	FOUND	%R	SOLID (MG/KG) TRUE	FOUND	C	LIMITS	%R
ALUMINUM	10000.0	9155.60	91.6					
ANTIMONY	1000.0	919.84	92.0					
ARSENIC	50.0	45.86	91.7					
BARIUM	1000.0	962.56	96.3					
BERYLLIUM	1000.0	961.55	96.2					
CADMIUM	1000.0	935.30	93.5					
CALCIUM	10000.0	9158.40	91.6					
CHROMIUM	1000.0	959.11	95.9					
COBALT	1000.0	930.22	93.0					
COPPER	1000.0	926.75	92.7					
IRON	1000.0	1038.10	103.8					
LEAD	50.0	47.34	94.7					
MAGNESIUM	10000.0	8903.10	89.0					
MANGANESE	1000.0	941.41	94.1					
MERCURY								
NICKEL	10000.0	8814.50	88.1					
POTASSIUM	10000.0	9066.30	90.7					
SELENIUM	50.0	49.36	98.7					
SILVER	3000.0	3211.80	107.1					
SODIUM	10000.0	9149.90	91.5					
THALLIUM	50.0	45.82	91.6					
VANADIUM	1000.0	941.52	94.2					
ZINC	1000.0	942.12	94.2					
CYANIDE								

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8

STANDARD ADDITION RESULTS

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

CONCENTRATION UNITS: UG/L

EPA SAMPLE NO.	AN	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	FINAL CONC.	R	Q
	AS	0.086	10.00	0.132	20.00	0.188	30.00	0.234	17.0	0.9992	
	AS	0.080	10.00	0.127	20.00	0.179	30.00	0.219	17.2	0.9988	

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ICP SERIAL DILUTIONS

EPA SAMPLE NO.

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

MATRIX (SOIL/WATER): WATER LEVEL (LOW/MED): MED

CONCENTRATION UNITS: UG/L

ANALYTE	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q	M
ALUMINUM	77799.00		76310.00		1.9		P
ANTIMONY	69.05		77.75	B	12.6		P
ARSENIC							NR
BARIUM	728.46		719.40	B	1.2		P
BERYLLIUM	6.55		15.25	B	132.8		P
CADMIUM	2.00	U	10.00	U			P
CALCIUM	239150.00		244805.00		2.4		P
CHROMIUM	171.83		180.10		4.8		P
COBALT	97.22		95.65	B	1.6		P
COPPER	68.64		66.60	B	3.0		P
IRON	372500.00		400270.00		7.5		P
LEAD							NR
MAGNESIUM	70946.00		71215.00		0.4		P
MANGANESE	5381.50		5532.50		2.8		P
MERCURY							NR
NICKEL	288.46		298.95		3.6		P
POTASSIUM	15729.00		15027.00	B	4.5		P
SELENIUM							NR
SILVER	4.00	U	20.00	U			P
SODIUM	239460.00		234040.00		2.3		P
THALLIUM							NR
VANADIUM	277.16		280.00		1.0		P
ZINC	459.62		478.20		4.0		P

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10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

ICP ID NUMBER: P1 DATE: 10/15/89

FLAME AA ID NUMBER:

FURNACE AA ID NUMBER:

ANALYTE	WAVE-LENGTH (NM)	BACK-GROUND	CRDL (UG/L)	IDL (UG/L)	M
ALUMINUM	308.20		200	22.0	P
ANTIMONY	206.80		60	13.0	P
ARSENIC			10		
BARIUM	493.40		200	2.0	P
BERYLLIUM	313.00		5	2.0	P
CADMIUM	226.50		5	2.0	P
CALCIUM	317.90		5000	30.0	P
CHROMIUM	267.70		10	5.0	P
COBALT	228.60		50	4.0	P
COPPER	324.70		25	6.0	P
IRON	259.90		100	6.0	P
LEAD			3		
MAGNESIUM	279.00		5000	37.0	P
MANGANESE	257.60		15	2.0	P
MERCURY			0.2		
NICKEL	231.60		40	5.0	P
POTASSIUM	766.40		5000	391.0	P
SELENIUM			5		
SILVER	328.00		10	4.0	P
SODIUM	588.90		5000	84.0	P
THALLIUM			10		
VANADIUM	292.40		50	4.0	P
ZINC	213.80		20	6.0	P

COMMENTS:
P1: THERMO JARRELL-ASH ICAP61

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11A
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

ICP ID NUMBER: P1 DATE: 07/01/89

ANALYTE	WAVE-LENGTH (NM)	INTERELEMENT CORRECTION FACTORS FOR: AL	CA	FE	MG	CR
ALUMINUM	308.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
ANTIMONY	206.80	0.0000000	0.0000000	0.0000000	0.0000000	0.0006700
ARSENIC						
BARIUM	493.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
BERYLLIUM	313.00	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
CADMIUM	226.50	0.0000000	0.0000000	-0.0000900	0.0000000	0.0000000
CALCIUM	317.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
CHROMIUM	267.70	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
COBALT	228.60	-0.0000300	0.0000000	0.0000000	0.0000000	0.0000000
COPPER	324.70	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
IRON	259.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
LEAD						
MAGNESIUM	279.00	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
MANGANESE	257.60	0.0000200	0.0000000	0.0000000	0.0000000	0.0000000
MERCURY						
NICKEL	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
POTASSIUM	766.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
SELENIUM						
SILVER	328.00	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
SODIUM	588.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
THALLIUM						
VANADIUM	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
ZINC	213.80	0.0000700	0.0000000	0.0000000	0.0000000	0.0000000

COMMENTS:

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11B

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

ICP ID NUMBER: P1 DATE: 07/01/89

ANALYTE	WAVE-LENGTH (NM)	INTERELEMENT CORRECTION FACTORS FOR: CU	MN	NI		
ALUMINUM	308.20	0.0000000	0.0014000	0.0000000		
ANTIMONY	206.80	0.0000000	0.0000000	-0.0024200		
ARSENIC						
BARIUM	493.40	0.0000000	0.0000000	0.0000000		
BERYLLIUM	313.00	0.0000000	0.0000000	0.0000000		
CADMIUM	226.50	0.0000000	0.0000000	0.0003500		
CALCIUM	317.90	0.0000000	0.0000000	0.0000000		
CHROMIUM	267.70	0.0000000	0.0005600	0.0000000		
COBALT	228.60	0.0000000	0.0001400	-0.0000500		
COPPER	324.70	0.0000000	0.0000000	0.0000000		
IRON	259.90	0.0000000	-0.0021900	0.0000000		
LEAD						
MAGNESIUM	279.00	0.0000000	-0.0021400	0.0000000		
MANGANESE	257.60	0.0000000	0.0000000	0.0000000		
MERCURY						
NICKEL	231.60	0.0000000	0.0000000	0.0000000		
POTASSIUM	766.40	0.0000000	0.0000000	0.0000000		
SELENIUM						
SILVER	328.00	0.0000000	0.0000000	0.0000000		
SODIUM	588.90	0.0000000	0.0000000	0.0000000		
THALLIUM						
VANADIUM	292.40	0.0000000	0.0000000	0.0000200		
ZINC	213.80	0.0016500	0.0004900	0.0045600		

COMMENTS:

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12
ICP LINEAR RANGES (QUARTERLY)

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

ICP ID NUMBER: P1 DATE: 10/15/89

ANALYTE	INTEG. TIME (SEC.)	CONCENTRATION (UG/L)	M
ALUMINUM	5.00	1000000.0	
ANTIMONY	5.00	25000.0	
ARSENIC			NR
BARIUM	5.00	100000.0	
BERYLLIUM	5.00	10000.0	
CADMIUM	5.00	25000.0	
CALCIUM	5.00	1500000.0	
CHROMIUM	5.00	200000.0	
COBALT	5.00	100000.0	
COPPER	5.00	250000.0	
IRON	5.00	1200000.0	
LEAD			NR
MAGNESIUM	5.00	1000000.0	
MANGANESE	5.00	100000.0	
MERCURY			NR
NICKEL	5.00	250000.0	
POTASSIUM	5.00	1000000.0	
SELENIUM			NR
SILVER	5.00	100000.0	
SODIUM	5.00	1000000.0	
THALLIUM			NR
VANADIUM	5.00	25000.0	
ZINC	5.00	150000.0	

COMMENTS:

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13
PREPARATION LOG

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

METHOD: AS

EPA SAMPLE NO.	PREPARATION DATE	WEIGHT (GRAM)	VOLUME (ML)
	12/19/89		250
	12/19/89		250
	12/19/89		250
	12/19/89		250
	12/19/89		250
	12/19/89		250

FORM XIII - IN

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ANALYSIS RUN LOG

LAB NAME: CONTRACT:

LAB CODE: CASE NO.: SAS NO.: SDG NO.:

INSTRUMENT ID NUMBER: METHOD: P

START DATE: 01/25/90 END DATE: 01/25/90 AA

| EPA SAMPLE NO. | D / F | TIME | % R | ANALYTES | | |

Appendix B
REPORT CODE TABLES

STRUCTURAL DEFECT REPORT - DEFECT CODES AND TEXT

DEEFECT CODE	DEFECT TEXT
5005	INVALID FORM
5006	FORM CONTAINS NONPRINTABLE CHARACTERS
5010	INVALID SUFFIX
5011	SUFFIX CONTAINS NONPRINTABLE CHARACTERS
5015	INVALID RECORD TYPE
5016	RECORD TYPE CONTAINS NONPRINTABLE CHARS
5020	MISSING HEADER RECORD
5025	NO DETAIL RECORDS/RECORD MISLABELED
5026	COMMENT RECORDS NOT AFTER DETAIL RECORDS
5030	FIRST SUFFIX RECORD FOR FORM NE TO AA
5035	INCORRECT # DETAIL RECORDS PER HEADER
5040	INCORRECT # COMMENT RECORDS PER HEADER
5041	INCORRECT # (H) RECORDS PER FORM/SUFFIX
5045	KEY VARIABLE — LAB CODE — MISSING
5050	KEY VARIABLE — CASE NUMBER — MISSING
5055	KEY VARIABLE — SDG NUMBER — MISSING
5060	RECORD SHIFT-INFO BEYOND BOUNDRIES
5100	INVALID MATRIX
5105	INVALID LEVEL
5110	PROBABLE SHIFT IN DATE RECEIVED FIELD
5115	INVALID PERCENT SOLIDS
5120	INVALID CONCENTRATION UNITS
5125	INVALID PREP BLANK MATRIX
5130	INVALID PREP BLANK UNITS
5135	INVALID SAMPLE % SOLIDS
5140	INVALID DUPLICATE % SOLIDS
5145	PROBABLE SHIFT IN DATE FIELD
5150	
5200	INVALID CONCENTRATION
5205	INVALID CONC FLAG (C)
5210	INVALID QUALIFIER (Q)
5215	INVALID METHOD (M)
5220	INVALID INITIAL CAL TRUE
5225	INVALID INITIAL CAL FOUND
5230	INVALID INITIAL CAL % R
5235	INVALID CONT CAL TRUE
5240	INVALID CONT CAL FOUND 1

DEFECT CODE	DEFECT TEXT
5245	INVALID CONT CAL % R 1
5250	INVALID CONT CAL FOUND 2
5255	INVALID CONT CAL % R 2
5260	INVALID AA TRUE
5265	INVALID AA FOUND
5270	INVALID AA % R
5275	INVALID ICP INIT TRUE
5280	INVALID ICP INIT FOUND
5285	INVALID ICP INIT % R
5290	INVALID ICP FINAL FOUND
5295	INVALID ICP FINAL % R
5300	INVALID INITIAL CAL BLANK
5305	INVALID INITIAL CAL FLAG (C)
5310	INVALID CONT CAL BLANK 1
5315	INVALID CC BLANK 1 FLAG (C)
5320	INVALID CONT CAL BLANK 2
5325	INVALID CC BLANK 2 FLAG (C)
5330	INVALID CONT CAL BLANK 3
5335	INVALID CC BLANK 3 FLAG (C)
5340	INVALID PREPARATION BLANK
5345	INVALID PREP BLANK FLAG (C)
5350	INVALID TRUE A
5355	INVALID TRUE AB
5360	INVALID INITIAL A
5365	INVALID INITIAL AB
5370	INVALID INITIAL % R
5375	INVALID FINAL A
5380	INVALID FINAL AB
5385	INVALID FINAL % R
5390	INVALID CONTROL LIMIT %R
5395	INVALID SPIKED SAMPLE RESULT
5400	INVALID SSR FLAG (C)
5405	INVALID SAMPLE RESULT
5410	INVALID SR FLAG (C)
5415	INVALID SPIKE ADDED
5420	INVALID PERCENT RECOVERED
5425	INVALID CONTROL LIMIT
5430	INVALID SAMPLE
5435	INVALID SAMPLE FLAG (C)
5440	INVALID DUPLICATE
5445	INVALID DUPLICATE FLAG (C)
5450	INVALID RPD
5455	INVALID AQUEOUS TRUE
5460	INVALID AQUEOUS FOUND
5465	INVALID AQUEOUS % RECOVERED
5470	INVALID SOLID TRUE
5475	INVALID SOLID FOUND
5480	INVALID SOLID FOUND FLAG (C)
5485	INVALID SOLID LOWER LIMIT

STRUCTURAL DEFECT REPORT - DEFECT CODES AND TEXT (CONT.)

DEFECT CODE	DEFECT TEXT
5490	INVALID SOLID UPPER LIMIT
5495	INVALID SOLID % RECOVERED
5500	INVALID DILUTION FACTOR
5505	INVALID 0 ADD ABSORBANCE
5510	INVALID 1 ADD CONCENTRATION
5515	INVALID 1 ADD ABSORBANCE
5520	INVALID 2 ADD CONCENTRATION
5525	INVALID 2 ADD ABSORBANCE
5530	INVALID 3 ADD CONCENTRATION
5535	INVALID 3 ADD ABSORBANCE
5540	INVALID FINAL CONCENTRATION
5545	INVALID CORRELATION COEF (R)
5550	INVALID INIT SAMPLE (I)
5555	INVALID INIT SAMPLE FLAG (C)
5560	INVALID SERIAL DILUTION (S)
5565	INVALID DILUTION FLAG (C)
5570	INVALID PERCENT DIFFERENCE
5575	PROBABLE SHIFT IN MERCURY PREP DATE
5580	INVALID MERCURY HOLDING TIME
5585	PROBABLE SHIFT IN CYANIDE PREP DATE
5590	INVALID CYANIDE HOLDING TIME
5595	INVALID WAVELENGTH
5600	INVALID BACKGROUND
5605	INVALID IDL
5610	INVALID ELEMENT 1 FACTOR
5615	INVALID ELEMENT 2 FACTOR
5620	INVALID ELEMENT 3 FACTOR
5625	INVALID ELEMENT 4 FACTOR
5630	INVALID ELEMENT 5 FACTOR
5635	INVALID INTEGRATION TIME
5640	INVALID WEIGHT
5645	INVALID VOLUME
5650	INVALID TIME
5655	INVALID ANALYTE IDENTIFIER

TECHNICAL DEFECT REPORT - DEFECT CODES AND TEXT WITH SOW REFERENCES

DEFECT CODE	DEFECT TEXT
100	COVER PAGE IS MISSING. (B16,A3)
101	LAB NAME IS MISSING. (B14)
102	CONTRACT NO. IS MISSING. (B14)
103	EPA CONTRACT NO. IS INAPPROPRIATE. (B14)
104	LAB CODE IS MISSING. (B14)
105	CASE NO. IS MISSING. (B14)
106	SOW NO. IS MISSING. (B16)
107	SOW NO. IS INCORRECT. (B16)
108	QUESTION ONE IS NOT ANSWERED. (B17)
109	QUESTION ONE IS ANSWERED INCORRECTLY. (B17)
110	QUESTION TWO IS NOT ANSWERED. (B17)
111	QUESTION TWO IS ANSWERED INCORRECTLY. (B17)
112	QUESTION THREE IS ANSWERED INCORRECTLY. (B17)
113	QUESTION THREE IS NOT LEFT BLANK. (B17)
114	EPA SAMPLE NO. IS NOT IN ALPHANUMERIC ORDER. (B17)
115	BLANKS BETWEEN EPA SAMPLE NOS. (B17)
116	EPA SAMPLE NO. IS NOT UNIQUE. (B17)
117	FORM SUFFIX NOT CORRECTLY INCREMENTED. (H5)
200	FORM 1 IS MISSING. (B17)
201	FORM I M QUALIFIER IS MISSING. (B18)"
202	FORM I M QUALIFIER IS INCORRECT. (B18)"
203	EPA SAMPLE NO. IS MISSING. (B15)
204	EPA SAMPLE NO. IS NOT REPORTED ON COVER PAGE. (B15)
205	LAB SAMPLE ID IS INCONSISTENT WITH THE COVER PAGE. (B15)
206	MATRIX IS MISSING. (B15)
207	MATRIX IS INCORRECT. (B15)
208	LEVEL IS MISSING. (B15)
209	LEVEL IS INCORRECT. (B15)
210	DATE RECEIVED IS MISSING. (B17)
211	DATE RECEIVED IS FORMATTED INCORRECTLY. (B17)
212	% SOLIDS IS MISSING. (B17)
213	% SOLIDS IS FORMATTED INCORRECTLY. (B17)
214	CONCENTRATION UNITS ARE MISSING. (B14)
215	COLOR BEFORE IS MISSING. (B18, B19)
216	COLOR AFTER IS MISSING. (B18, B19)
217	CLARITY BEFORE IS MISSING. (B18, B19)
218	CLARITY AFTER IS MISSING. (B18, B19)
219	CONCENTRATION UNITS ARE INCONSISTENT WITH THE SAMPLE MATRIX. (B17)
220	% SOLIDS IS INCONSISTENT WITH THE SAMPLE MATRIX. (B17)
221	TEXTURE IS MISSING. (B19)
222	ARTIFACTS ARE MISSING. (B19)
225	THIS ELEMENT IS XD MORE THAN ONCE IN FORM 14. (B17)
226	PREPARATION LOG (FORM 13) DOES NOT CONTAIN DATA FOR THE ELEMENT. (B17)
227	ANALYSIS RUN LOG (FORM 14) DOES NOT CONTAIN DATA FOR THE ELEMENT. (B17)
228	INVALID NUMERIC FIELD FOR THE SAMPLE CONCENTRATION. (B17)
229	CONCENTRATION FLAG IN FORM I COLUMN C IS INCORRECT. (B17)
230	FORM I 'Q' QUALIFIER IS INCORRECT. (B17)
231	REPORTED CONCENTRATION IS NOT TO THE REQUIRED SIGNIFICANT FIGURES. (B7)
234	CONCENTRATION FLAG IN FORM I COLUMN C DISAGREES WITH THE REPORTED CONCENTRATION. (B18)
237	SAMPLE VALUES ARE INVALID BECAUSE THE IDL EXCEEDS THE CRDL AND REPORTED VALUES ARE LESS THAN 5X IDL. (C1)
239	ICP LINEAR RANGE (FORM 12) DOES NOT CONTAIN DATA FOR THE ELEMENT. (B17)
240	CONCENTRATION REPORTED ON FORM I WAS OPTAINED FROM A VALUE EXCEEDING THE LINEAR RANGE. (A3,B34)
300	FORM 2A IS MISSING. (B21)
301	M COLUMN METHOD IS MISSING. (B20)
302	M COLUMN METHOD IS INCORRECT. (B20)
303	INITIAL CALIBRATION SOURCE IS MISSING. (B19)
304	CONTINUING CALIBRATION SOURCE IS MISSING. (B19)
305	INITIAL AND CONTINUING CALIBRATION VALUES ARE MISSING FOR METHOD USED. (B19,B20)
306	AN ICV WITH NO CORRESPONDING CCV. (B20)
307	CCVS ARE NOT LISTED IN INCREASING TEMPORAL ORDER OF ANALYSIS. (B36)
308	INITIAL CALIBRATION TRUE VALUE IS MISSING. (B19)

TECHNICAL DEFECT REPORT - DEFECT CODES AND TEXT (CONT.)

DEFECT CODE	DEFECT TEXT
309	CONTINUING CALIBRATION TRUE VALUE IS MISSING. (B20)
310	INITIAL CALIBRATION %R IS MISSING. (B19)
311	CONTINUING CALIBRATION %R IS MISSING. (B20)
312	INITIAL CALIBRATION TRUE VALUE IS NOT REPORTED TO ONE DECIMAL PLACE. (B19)
313	INITIAL CALIBRATION FOUND VALUE IS NOT REPORTED TO TWO DECIMAL PLACE. (B19)
314	INITIAL CALIBRATION %R VALUE IS NOT REPORTED TO ONE DECIMAL PLACE. (B19)
315	INITIAL CALIBRATION %R IS INCORRECT. (B19)
316	CONTINUING CALIBRATION TRUE VALUE IS NOT REPORTED TO ONE DECIMAL PLACE. (B20)
317	CONTINUING CALIBRATION FOUND VALUE IS NOT REPORTED TO TWO DECIMAL PLACE. (B20)
318	CONTINUING CALIBRATION %R IS NOT REPORTED TO ONE DECIMAL PLACE. (B20)
319	CONTINUING CALIBRATION %R IS INCORRECT. (B20)
320	INITIAL CALIBRATION %R IS OUTSIDE THE SPECIFIED CONTROL LIMITS. (E5)
321	CONTINUING CALIBRATION %R IS OUTSIDE THE SPECIFIED CONTROL LIMIT. (E5)
322	THE SAME CONTINUING CALIBRATION STANDARD IS NOT USED THROUGHOUT THE CASE. (E6)
323	ICVS ON FORMS 2A AND 14 DO NOT CORRESPOND. (B20,B36)
324	CCVS ON FORMS 2A AND 14 DO NOT CORRESPOND. (B20,B36)
400	FORM 2B IS MISSING. (B21)
401	AA CRDL STANDARD SOURCE IS MISSING. (B21)
402	ICP CRDL STANDARD SOURCE IS MISSING. (B21)
403	AA CRDL STANDARD FOR METHOD USED IS MISSING. (B21)
404	CRDL STANDARD FOR AA TRUE VALUE IS MISSING. (B21)
405	CRDL STANDARD FOR AA TRUE VALUE IS NOT REPORTED TO ONE DECIMAL PLACE. (B21)
406	CRDL STANDARD FOR AA FOUND VALUE IS MISSING. (B21)
407	CRDL STANDARD FOR AA FOUND VALUE IS NOT REPORTED TO TWO DECIMAL PLACES. (B21)
408	%R FOR AA IS MISSING. (B21)
409	%R FOR AA IS NOT REPORTED TO ONE DECIMAL PLACE. (B21)
410	%R FOR AA IS INCORRECT. (B21)
411	CRDL STANDARD FOR AA IS NOT AT THE CRDL. (B21,E6)
412	ICP CRDL STANDARD FOR METHOD USED IS MISSING. (B21)
413	CRDL STANDARD FOR ICP TRUE VALUE IS MISSING. (B21)
414	CRDL STANDARD FOR ICP TRUE VALUE IS NOT REPORTED TO ONE DECIMAL PLACE. (B21)
415	CRDL STANDARD FOR ICP FOUND VALUE IS MISSING. (B21)
416	CRDL STANDARD FOR ICP FOUND VALUE IS NOT REPORTED TO TWO DECIMAL PLACES. (B21)
417	%R FOR ICP IS MISSING. (B21)
418	%R FOR ICP IS NOT REPORTED TO ONE DECIMAL PLACE. (B21)
419	%R FOR ICP IS INCORRECT. (B21)
425	CRDL STANDARD FOR ICP NOT RUN AT TWO TIMES THE CRDL WHEN CRDL IS GREATER THAN THE IDL. (B21,E6)
426	CRDL STANDARD FOR ICP NOT RUN AT TWO TIMES THE IDL WHEN IDL IS GREATER THAN THE CRDL. (B21,E6)
427	CRAS ON FORM 2A AND FORM 14 DO NOT CORRESPOND. (B21,B36)
428	CRIS ON FORM 2A AND FORM 14 DO NOT CORRESPOND. (B21,B36)
500	FORM 3 IS MISSING. (B22)
501	M QUALIFIER IS MISSING. (B23)
502	M QUALIFIER IS INCORRECT. (B23)
503	PREPARATION BLANK MATRIX IS MISSING. (B22)
504	PREPARATION BLANK MATRIX IS REPORTED INCORRECTLY. (B22)
505	PREPARATION BLANK CONCENTRATION UNITS ARE MISSING. (B22,E8)
506	PREPARATION BLANK CONCENTRATION UNITS ARE INCORRECT. (B22,E8)

TECHNICAL DEFECT REPORT - DEFECT CODES AND TEXT (CONT.)

DEFECT CODE	DEFECT TEXT
507	PREPARATION BLANK CONCENTRATION UNITS ARE INCONSISTENT WITH MATRIX. (B22,E8)
509	INITIAL AND CONTINUING CALIBRATION BLANKS ARE MISSING FOR METHOD USED. (B23,E6-E8)
510	INITIAL CALIBRATION COLUMN C QUALIFIER IS INCORRECT. (B23)
511	CONTINUING CALIBRATION COLUMN C QUALIFIER IS INCORRECT. (B23)
512	ABSOLUTE VALUE OF INITIAL CALIBRATION BLANK EXCEEDS THE CRDL. (E7/C1)
513	ABSOLUTE VALUE OF CONTINUING CALIBRATION BLANK EXCEEDS THE CRDL. (E7/C1)
514	ABSOLUTE VALUE OF INITIAL CALIBRATION BLANK EXCEEDS THE IDL (IDL > CRDL). (E7/C1)
515	ABSOLUTE VALUE OF CONTINUING CALIBRATION BLANK EXCEEDS THE IDL (IDL > CRDL). (E7/C1)
516	INITIAL CALIBRATION BLANK IS NOT REPORTED TO ONE DECIMAL PLACE. (B23,E6-E8)
517	CONTINUING CALIBRATION BLANK IS NOT REPORTED TO ONE DECIMAL PLACE. (B23,E6-E8)
518	ICBS ON FORMS 3 AND 14 DO NOT CORRESPOND. (B20,B36)
519	CCBS ON FORMS 3 AND 14 DO NOT CORRESPOND. (B20,B36)
520	PREPARATION BLANK IS MISSING. (B23,E6-E8)
521	PREPARATION BALNK COLUMN C QUALIFIER IS INCORRECT. (B23)
522	PREPARATION BALNK FOR SOIL IS NOT REPORTED TO THREE DECIMAL PLACES. (B23)
523	AQUEOUS PREPARATION BLANK IS NOT REPORTED CORRECTLY. (B23)
524	SAMPLE VALUE IS LESS THAN 10 TIMES THE PREPARATION BLANK VALUE AND THE PREPARATION BLANK EXCEEDS THE CRDL. (E7)
525	SAMPLE VALUE IS BELOW 10 TIMES CRDL AND THE PREPARATION BLANK VALUE IS BELOW THE NEGATIVE CRDL. (E7)
526	SOIL PREPARATION BLANK ON FORMS 3 AND 14 DO NOT CORRESPOND. (B23, B36)
527	AQUEOUS PREPARATION BLANK ON FORMS 3 AND 14 DO NOT CORRESPOND. (B23, B36)
528	SOIL PREPARATION BLANK ON FORMS 3 AND 13 DO NOT CORRESPOND. (B23, B36)
529	AQUEOUS PREPARATION BLANK ON FORMS 3 AND 13 DO NOT CORRESPOND. (B23, B36)
600	FORM 4 IS MISSING. (B24)
601	ICP ID NO. IS MISSING. (B24)
602	ICS SOURCE ID IS MISSING. (B24)
603	TRUE VALUES FOR (SOLUTION A/SOLUTION AB) ARE MISSING. (B24)
604	TRUE VALUES FOR SOLUTION A ARE NOT REPORTED TO THE NEAREST WHOLE NUMBER. (B24)
605	TRUE VALUES FOR SOLUTION AB ARE NOT REPORTED TO THE NEAREST WHOLE NUMBER. (B24)
606	ICP INTERFERENCE CHECK SAMPLE IS MISSING. (B24)
607	INITIAL SOLUTION A VALUES ARE NOT REPORTED TO THE NEAREST WHOLE NUMBER. (B24)
608	INITIAL SOLUTION AB VALUES ARE NOT REPORTED TO ONE DECIMAL PLACE. (B24)
609	%R FOR INITIAL FOUND VALUE IS OUTSIDE THE SPECIFIED CONTROL LIMITS. (B24)
610	%R IS MISSING FOR INITIAL FOUND VALUE. (B24)
611	%R IS NOT REPORTED TO ONE DECIMAL PLACE FOR INITIAL FOUND VALUE.(B24)
612	%R IS INCORRECT FOR INITIAL FOUND VALUE.(B24)
613	FINAL VALUES FOR (SOLUTION A/SOLUTION AB) ARE MISSING. (B24)
614	FINAL SOLUTION A VALUES ARE NOT REPORTED TO THE NEAREST WHOLE NUMBER. (B24)
615	FINAL SOLUTION AB VALUES ARE NOT REPORTED TO ONE DECIMAL PLACE. (B24)
616	%R FOR FINAL FOUND VALUE IS OUTSIDE THE SPECIFIED CONTROL LIMITS. (B24)

TECHNICAL DEFECT REPORT - DEFECT CODES AND TEXT (CONT.)

DEFECT CODE	DEFECT TEXT
617	%R IS MISSING FOR FINAL FOUND VALUE. (B24)
618	%R IS NOT REPORTED TO ONE DECIMAL PLACE FOR FINAL FOUND VALUE. (B24)
619	%R IS INCORRECT FOR FINAL FOUND VALUE. (B24)
620	INITIAL ICS (A/AB) EXCEEDS THE LINEAR RANGE. (B36)
621	FINAL ICS (A/AB) EXCEEDS THE LINEAR RANGE. (B36)
622	ICS ON FORMS 4 AND 14 DO NOT CORRESPOND. (B24,B36)
700	FORM 5A IS MISSING. (B25)
701	M QUALIFIER IS MISSING. (B26)
702	M QUALIFIER IS INCORRECT. (B26)
703	MATRIX IS MISSING. (B25)
704	MATRIX IS INCORRECT. (B25)
705	LEVEL IS MISSING. (B25)
706	LEVEL IS INCORRECT. (B25)
707	CONCENTRATION UNITS ARE MISSING. (B25)
708	CONCENTRATION UNITS ARE INCORRECT. (B25)
709	% SOLIDS IS MISSING. (B25)
710	% SOLIDS IS FORMATTED INCORRECTLY. (B25)
711	% SOLIDS IS INCONSISTENT WITH FORM 1 % SOLIDS. (B25)
712	CONCENTRATION UNITS ARE INCONSISTENT WITH MATRIX. (B25)
713	% SOLIDS IS INCONSISTENT WITH MATRIX. (B25)
714	EPA SAMPLE NO. IS MISSING. (B25)
715	EPA SAMPLE NO. IS MISSING A (S) SUFFIX. (B11)
716	EPA SAMPLE NO. IS NOT REPORTED ON COVER PAGE. (B11)
717	THIS ELEMENT IS X'D MORE THAN ONCE IN FORM 14. (B17)
718	PREPARATION LOG (FORM 13) DOES NOT CONTAIN DATA FOR THE SAMPLE RESULT. (B17)
719	ANALYSIS RUN LOG (FORM 14) DOES NOT CONTAIN DATA FOR THE SAMPLE RESULT. (B17)
720	PREPARATION LOG (FORM 13) DOES NOT CONTAIN DATA FOR THE SPIKE SAMPLE RESULT. (B17)
721	ANALYSIS RUN LOG (FORM 14) DOES NOT CONTAIN DATA FOR THE SPIKE SAMPLE RESULT. (B17)
722	SPIKE SAMPLE RESULT, SAMPLE RESULT, AND SPIKE ADDED IS MISSING FOR THE METHOD USED. (E9)
723	CONTROL LIMITS ARE INCORRECT. (B25)
724	INVALID NUMERIC FIELD FOR SPIKED SAMPLE RESULT. (B25)
725	SPIKE SAMPLE RESULT IS NOT REPORTED TO FOUR DECIMAL PLACES. (B25)
726	INVALID NUMERIC FIELD FOR SAMPLE RESULT. (B25)
727	SAMPLE RESULT IS NOT REPORTED TO FOUR DECIMAL PLACES. (B25)
728	INVALID NUMERIC FIELD FOR SPIKE ADDED. (B25)
729	SPIKE ADDED IS NOT REPORTED TO TWO DECIMAL PLACES. (B25)
730	SPIKE SAMPLE RESULT C QUALIFIER IS INCORRECT. (B25)
731	SAMPLE RESULT C QUALIFIER IS INCORRECT. (B25)
732	INVALID NUMERIC FIELD FOR %R. (B25)
733	%R IS NOT REPORTED TO ONE DECIMAL PLACE. (B26)
734	Q QUALIFIER IS INCORRECT. (B25)
735	SPIKE ADDED IS MISSING. (B25)
736	SPIKE ADDED IS INCORRECT. (B25)
737	%R IS MISSING. (B26)
738	%R IS INCORRECT. (B26)
739	CONTROL LIMITS ARE NOT LEFT EMPTY WHEN THE SAMPLE IS FOUR TIMES GREATER THAN THE SPIKE ADDED. (B25,E10)
740	CONTROL LIMITS ARE MISSING. (B26)
741	Q QUALIFIER IS MISSING. (B26)
742	SAMPLE RESULT CONCENTRATION IS INCONSISTENT WITH FORM I CONCENTRATION. (B25,B26)

TECHNICAL DEFECT REPORT - DEFECT CODES AND TEXT (CONT.)

DEFECT CODE	DEFECT TEXT
743	SPIKE SAMPLE RESULT EXCEEDS LINEAR RANGE. (B36)
800	FORM 5B IS MISSING. (B26)
801	M QUALIFIER IS MISSING. (B27)
802	M QUALIFIER IS INCORRECT. (B27)
803	MATRIX IS MISSING. (B26)
804	MATRIX IS INCORRECT. (B26)
805	LEVEL IS MISSING. (B26)
806	LEVEL IS INCORRECT. (B26)
807	EPA SAMPLE NO. IS MISSING. (B26)
808	EPA SAMPLE NO. IS MISSING AN (A) SUFFIX. (B11)
809	THIS ELEMENT IS XD MORE THAN ONCE IN FORM 14. (B17)
810	PREPARATION LOG (FORM 13) DOES NOT CONTAIN DATA FOR THE SAMPLE RESULT. (B17)
811	ANALYSIS RUN LOG (FORM 14) DOES NOT CONTAIN DATA FOR THE SAMPLE RESULT. (B17)
812	PREPARATION LOG (FORM 13) DOES NOT CONTAIN DATA FOR THE SPIKE SAMPLE RESULT. (B17)
813	ANALYSIS RUN LOG (FORM 14) DOES NOT CONTAIN DATA FOR THE SPIKE SAMPLE RESULT. (B17)
814	SPIKE SAMPLE RESULT, SAMPLE RESULT, AND SPIKE ADDED IS MISSING FOR THE METHOD USED. (B26)
815	POST DIGEST SPIKE IS NOT REQUIRED. (B36)
816	CONTROL LIMIT IS REPORTED WHEN IT SHOULD BE BLANK. (B26)
817	INVALID NUMERIC FIELD FOR SPIKED SAMPLE RESULT. (B26)
818	SPIKE SAMPLE RESULT IS NOT REPORTED TO TWO DECIMAL PLACES. (B26)
819	INVALID NUMERIC FIELD FOR SAMPLE RESULT. (B26)
820	SAMPLE RESULT IS NOT REPORTED TO TWO DECIMAL PLACES. (B26)
821	INVALID NUMERIC FIELD FOR SPIKE ADDED. (B26)
822	SPIKE ADDED IS NOT REPORTED TO ONE DECIMAL PLACE. (B27)
823	SPIKE SAMPLE RESULT C QUALIFIER IS INCORRECT. (B26)
824	SAMPLE RESULT C QUALIFIER IS INCORRECT. (B26)
825	INVALID NUMERIC FIELD FOR %R. (B27)
826	%R IS NOT REPORTED TO ONE DECIMAL PLACE. (B27)
827	Q QUALIFIER IS NOT LEFT BALNK. (B26)
828	SPIKE ADDED IS MISSING. (B27)
829	SPIKE ADDED IS NOT ADDED AT THE GREATER OF TWO TIMES CRDL OR TWICE THE SAMPLE VALUE. (B23,E9)
830	%R IS MISSING. (B27)
831	%R IS INCORRECT. (B27)
832	SAMPLE RESULT CONCENTRATION IS INCONSISTENT WITH FORM I CONCENTRATION. (B26,B27)
833	SPIKE RESULT EXCEEDS LINEAR RANGE. (B36)
900	FORM 6 IS MISSING. (B27)
901	M QUALIFIER IS MISSING. (B27)
902	M QUALIFIER IS INCORRECT. (B27)
903	MATRIX IS MISSING. (B27)
904	MATRIX IS INCORRECT. (B27)
905	LEVEL IS MISSING. (B27)
906	LEVEL IS INCORRECT. (B27)
907	CONCENTRATION UNITS ARE MISSING. (B27)
908	CONCENTRATION UNITS ARE INCORRECT. (B27)
909	% SOLIDS FOR SAMPLE IS MISSING. (B27)
910	% SOLIDS FOR SAMPLE IS FORMATTED INCORRECTLY. (B27)
911	SAMPLE % SOLIDS IS INCONSISTENT WITH FORM 1 % SOLIDS. (B25)
912	% SOLIDS FOR DUPLICATE IS MISSING. (B27)
913	% SOLIDS FOR DUPLICATE IS FORMATTED INCORRECTLY. (B27)
914	CONCENTRATION UNITS ARE INCONSISTENT WITH MATRIX. (B27)
915	% SOLIDS FOR SAMPLE IS INCORRECT. (B27)
916	% SOLIDS FOR DUPLICATE IS INCORRECT. (B27)
917	EPA SAMPLE NO. IS MISSING. (B27)
918	EPA SAMPLE NO. IS MISSING A (D) SUFFIX. (B11)
919	FORM 6 EPA SAMPLE NO. DOES NOT HAVE A CORRESPONDING FORM 1 SAMPLE. (B11)
920	EPA SAMPLE NO. IS NOT LISTED ON COVER PAGE. (B11)
921	THIS ELEMENT IS X'D MORE THAN ONCE IN FORM 14. (B17)

TECHNICAL DEFECT REPORT - DEFECT CODES AND TEXT (CONT.)

DEFECT CODE	DEFECT TEXT
922	PREPARATION LOG (FORM 13) DOES NOT CONTAIN DATA FOR THE SAMPLE RESULT. (B17)
923	ANALYSIS RUN LOG (FORM 14) DOES NOT CONTAIN DATA FOR THE SAMPLE RESULT. (B17)
924	PREPARATION LOG (FORM 13) DOES NOT CONTAIN DATA FOR THE DUPLICATE RESULT. (B17)
925	ANALYSIS RUN LOG (FORM 14) DOES NOT CONTAIN DATA FOR THE DUPLICATE RESULT. (B17)
926	INVALID NUMERIC FIELD FOR CONTROL LIMIT. (B28)
927	CONTROL LIMIT IS NOT REPORTED TO ONE DECIMAL PLACE. (B27)
928	INVALID NUMERIC FIELD FOR SAMPLE VALUE. (B28)
929	SAMPLE RESULT IS NOT REPORTED TO FOUR DECIMAL PLACES. (B28)
930	SAMPLE RESULT C QUALIFIER IS INCORRECT. (B28)
931	INVALID NUMERIC FIELD FOR DUPLICATE VALUE. (B28)
932	DUPLICATE RESULT IS NOT REPORTED TO FOUR DECIMAL PLACES. (B28)
933	DUPLICATE RESULT C QUALIFIER IS INCORRECT. (B28)
934	INVALID NUMERIC FIELD FOR RPD. (B28)
935	RPD IS NOT REPORTED TO ONE DECIMAL PLACE. (B28)
936	Q QUALIFIER IS INCORRECT. (B28)
937	SAMPLE AND DUPLICATE RESULTS ARE MISSING FOR THE ALTERNATE METHOD USED. (B27,B28)
938	CONTROL LIMIT IS MISSING. (B27)
939	CONTROL LIMIT IS INCORRECT. (B27)
940	CONTROL LIMIT IS NOT LEFT EMPTY WHEN SAMPLE OR DUPLICATE IS GREATER THAN FIVE TIMES CRDL. (B27)
941	RPD IS MISSING. (B28)
942	RPD IS INCORRECT. (B28)
943	Q QUALIFIER IS MISSING. (B28)
944	SAMPLE RESULT CONCENTRATION IS INCONSISTENT WITH FORM I CONCENTRATION. (B27,B28)
945	DUPLICATE RESULT EXCEEDS LINEAR RANGE. (B36)
1000	FORM 7 IS MISSING. (B29)
1001	SOLID LCS SOURCE ID IS MISSING. (B29)
1002	AQUEOUS LCS SOURCE ID IS MISSING. (B29)
1003	LCS IS MISSING FOR METHOD/MATRIX. (B29)
1004	NO. OF LCS ON FORMS 7 AND 13 DO NOT CORRESPOND FOR THE ELEMENT. (B29)
1005	NO. OF LCS ON FORMS 7 AND 14 DO NOT CORRESPOND FOR THE ELEMENT. (B29)
1006	AQUEOUS LCS IS MISSING FOR THE ELEMENT. (B29)
1007	AQUEOUS TRUE VALUE IS NOT REPORTED TO ONE DECIMAL PLACE. (B29)
1008	AQUEOUS FOUND VALUE IS MISSING. (B29)
1009	AQUEOUS FOUND VALUE IS NOT REPORTED TO TWO DECIMAL PLACES. (B29)
1010	AQUEOUS TRUE VALUE IS MISSING. (B29)
1011	AQUEOUS %R IS MISSING. (B29)
1012	AQUEOUS %R IS NOT REPORTED TO ONE DECIMAL PLACE. (B29)
1013	AQUEOUS %R IS INCORRECT. (B29)
1014	AQUEOUS %R IS OUTSIDE CONTROL LIMITS. (B29)
1015	SOLID LCS IS MISSING FOR THE ELEMENT. (B29)
1016	SOLID TRUE VALUE IS NOT REPORTED TO ONE DECIMAL PLACE. (B29)
1017	SOLID FOUND VALUE IS MISSING. (B29)
1018	SOLID FOUND VALUE IS NOT REPORTED TO ONE DECIMAL PLACE. (B29)
1019	SOLID TRUE VALUE IS MISSING. (B29)
1020	SOLID LCS COLUMN C QUALIFIER IS INCORRECT. (B29)
1021	SOLID LCS LOWER LIMIT VALUE IS MISSING. (B29)
1022	SOLID LCS LOWER LIMIT VALUE IS NOT REPORTED TO ONE DECIMAL PLACE. (B29)
1023	SOLID LCS UPPER LIMIT VALUE IS MISSING. (B29)
1024	SOLID LCS UPPER LIMIT VALUE IS NOT REPORTED TO ONE DECIMAL PLACE. (B29)
1025	SOLID LCS FOUND VALUE IS OUTSIDE THE CONTROL LIMITS. (B29)
1026	SOLID LCS %R IS MISSING. (B29)
1027	SOLID LCS %R IS NOT REPORTED TO ONE DECIMAL PLACE. (B29)
1028	SOLID LCS %R IS INCORRECT. (B29)

TECHNICAL DEFECT REPORT - DEFECT CODES AND TEXT (CONT.)

DEFECT CODE	DEFECT TEXT
1100	FORM 8 IS MISSING. (B30)
1101	EPA SAMPLE NOS ARE NOT IN ALPHANUMERIC ORDER. (B30)
1102	MSA WAS INCORRECTLY DONE ON LCS. (B30)
1103	MSA WAS INCORRECTLY DONE ON PREP. BLANK. (B30)
1104	EPA SAMPLE NO. IS INCORRECT. (B30)
1105	ANALYTE IS MISSING. (B30)
1106	COMPLIANCE CAN NOT BE DETERMINED - SHIFT IN THE DATA FIELDS. (B30)
1107	ZERO ADDED ABSORBANCE IS MISSING. (B30)
1108	ZERO ADDED ABSORBANCE IS NOT REPORTED TO THREE DECIMAL PLACES. (B30)
1109	FIRST ADDED CONCENTRATION IS MISSING. (B30)
1110	FIRST ADDED CONCENTRATION IS NOT REPORTED TO TWO DECIMAL PLACES. (B30)
1111	FIRST ADDED ABSORBANCE IS MISSING. (B30)
1112	FIRST ADDED ABSORBANCE IS NOT REPORTED TO THREE DECIMAL PLACES. (B30)
1113	SECOND ADDED CONCENTRATION IS MISSING. (B30)
1114	SECOND ADDED CONCENTRATION IS NOT REPORTED TO TWO DECIMAL PLACES. (B30)
1115	SECOND ADDED ABSORBANCE IS MISSING. (B30)
1116	SECOND ADDED ABSORBANCE IS NOT REPORTED TO THREE DECIMAL PLACES. (B30)
1117	THIRD ADDED CONCENTRATION IS MISSING. (B30)
1118	THIRD ADDED CONCENTRATION IS NOT REPORTED TO TWO DECIMAL PLACES. (B30)
1119	THIRD ADDED ABSORBANCE IS MISSING. (B30)
1120	THIRD ADDED ABSORBANCE IS NOT REPORTED TO THREE DECIMAL PLACES. (B30)
1121	FIRST ADDED CONCENTRATION IS NOT AT THE APPROPRIATE LEVEL. (E17)
1122	SECOND ADDED CONCENTRATION IS NOT AT THE APPROPRIATE LEVEL. (E17)
1123	THIRD ADDED CONCENTRATION IS NOT AT THE APPROPRIATE LEVEL. (E17)
1124	FINAL CONCENTRATION IS MISSING. (B31)
1125	FINAL CONCENTRATION IS NOT REPORTED TO ONE DECIMAL PLACE. (B31)
1126	R VALUE IS MISSING. (B31)
1127	R VALUE IS NOT REPORTED TO FOUR DECIMAL PLACES. (B31)
1128	R VALUE IS NOT CONSISTENT WITH REPORTED DATA. (B31)
1129	Q QUALIFIER IS INCORRECT. (B31)
1130	Q QUALIFIER IS MISSING. (B31)
1131	EPA SAMPLE NO. IS NOT REPORTED ON COVER PAGE. (B30)
1132	THERE IS NO DATA ON FORM 14 FOR THE MSA. (B30)
1133	FINAL CONCENTRATION IS INCONSISTENT WITH THE REPORTED DATA. (B31)
1134	EPA SAMPLE NO. DOES NOT HAVE A CORRESPONDING FORM 1. (B21)
1135	REPORTED CONCENTRATION ON FORMS 1 AND 8 DISAGREE. (B21)
1136	EPA SAMPLE NO. DOES NOT HAVE A CORRESPONDING FORM 5A. (B21)
1137	REPORTED CONCENTRATION ON FORMS 8 AND 5A DISAGREE. (B21)
1138	EPA SAMPLE NO. DOES NOT HAVE A CORRESPONDING FORM 6. (B21)
1139	REPORTED CONCENTRATION ON FORMS 8 AND 6 DISAGREE. (B21)
1200	FORM 9 IS MISSING. (B31)
1201	M QUALIFIER IS MISSING. (B32)
1202	M QUALIFIER IS INCORRECT. (B32)
1203	EPA SAMPLE NO. DOES NOT HAVE A CORRESPONDING FORM 1. (B32)
1204	MATRIX IS MISSING. (B31)
1205	MATRIX IS INCORRECT. (B31)
1206	LEVEL IS MISSING. (B31)
1207	LEVEL IS INCORRECT. (B31)
1208	EPA SAMPLE NO. IS MISSING. (B31)
1209	EPA SAMPLE NO. IS MISSING A (L) SUFFIX. (B11)
1210	THIS ELEMENT IS X'D MORE THAN ONCE IN FORM 14. (B31)
1211	PREPARATION LOG (FORM 13) DOES NOT CONTAIN DATA FOR THE INITIAL SAMPLE RESULT. (B31)
1212	ANALYSIS RUN LOG (FORM 14) DOES NOT CONTAIN DATA FOR THE INITIAL SAMPLE RESULT. (B31)
1213	ANALYSIS RUN LOG (FORM 14) DOES NOT CONTAIN DATA FOR THE SERIAL DILUTION RESULT. (B31)

TECHNICAL DEFECT REPORT - DEFECT CODES AND TEXT (CONT.)

DEFECT CODE	DEFECT TEXT
1214	SERIAL DILUTION IS MISSING FOR METHOD USED. (B31)
1215	INVALID NUMERIC FIELD FOR THE INITIAL SAMPLE RESULT. (B31)
1216	INITIAL SAMPLE RESULT IS NOT REPORTED TO TWO DECIMAL PLACES. (B31)
1217	INITIAL SAMPLE RESULT C QUALIFIER IS INCORRECT. (B31)
1218	INVALID NUMERIC FIELD FOR THE SERIAL DILUTION RESULT. (B31)
1219	SERIAL DILUTION RESULT IS NOT REPORTED TO TWO DECIMAL PLACES. (B31)
1220	SERIAL DILUTION RESULT C QUALIFIER IS INCORRECT. (B31)
1221	INVALID NUMERIC FIELD FOR THE % DIFFERENCE. (B31)
1222	% DIFFERENCE IS NOT REPORTED TO ONE DECIMAL PLACE. (B31)
1223	Q QUALIFIER IS INCORRECT. (B32)
1224	SERIAL DILUTION RESULT IS MISSING. (B31)
1225	% DIFFERENCE IS MISSING. (B32)
1226	% DIFFERENCE IS INCORRECT. (B32)
1227	Q QUALIFIER IS MISSING. (B32)
1228	INITIAL SAMPLE RESULT CONCENTRATION DISAGREES WITH FORM 1 CONCENTRATION. (B31)
1229	SERIAL DILUTION RESULT EXCEEDS LINEAR RANGE. (B32)
1230	% DIFFERENCE IS NOT REQUIRED. (B32)
1300	FORM 10 IS MISSING. (B32)
1301	IDL IS MISSING. (B32)
1302	M QUALIFIER IS MISSING. (B33)
1303	M QUALIFIER IS INCORRECT. (B33)
1304	IDL IS NOT REPORTED TO ONE DECIMAL PLACE. (B32)
1305	IDL IS NOT REPORTED TO A WHOLE NUMBER. (E14)
1306	WAVELENGTH IS MISSING. (B32)
1307	WAVELENGTH IS NOT REPORTED TO TWO DECIMAL PLACES. (B32)
1308	BACKGROUND CODE IS MISSING. (B33)
1309	BACKGROUND CODE IS INCORRECT. (B33)
1310	DATE IS MISSING. (B32)
1311	DATE IS FORMATTED INCORRECTLY. (B32)
1312	ICP ID NUMBER IS MISSING. (B32)
1313	FURNACE ID NUMBER IS MISSING. (B32)
1314	FLAME ID NUMBER IS MISSING. (B32)
1315	INSTRUMENT IDLS WERE DETEMINED AFTER DATE OF ANALYSIS. (E14)
1316	INSTRUMENT IDLS WERE DETEMINED MORE THAN THREE MONTHS BEFORE THE DATE OF ANALYSIS. (E14)
1317	THERE IS NO IDL ON FORM 10 CORRESPONDING TO INSTRUMENT USED FOR THE ELEMENTS ANLYSIS. (B32)
1400	FORM 11 IS MISSING. (B33)
1401	WAVELENGTH IS NOT REPORTED TO TWO DECIMAL PLACES. (B33)
1402	DATE IS MISSING. (B33)
1403	DATE IS FORMATTED INCORRECTLY. (B33)
1404	ICP ID NO. IS MISSING. (B33)
1405	ICP INTERELEMENT CORRECTION FACTOR IS MISSING FOR ICP ID NO. (B33)
1406	ANALYTE INTERELEMENT CORRECTION FACTOR IS MISSING. (B34)
1407	ANALYTE INTERELEMENT CORRECTION FACTOR IS NOT REPORTED TO SEVEN DECIMAL PLACES. (B34)
1408	INSTRUMENT INTERELEMENT CORRECTION FACTORS WERE DETERMINED AFTER DATE OF ANALYSIS. (B33)
1409	INSTRUMENT INTERELEMENT CORRECTION FACTORS WERE DETERMINED MORE THAN ONE YEAR FROM DATE OF ANALYSIS. (B33)
1500	FORM 12 IS MISSING. (B34)
1501	M QUALIFIER IS REPORTED IMPROPERLY. (B35)
1502	M QUALIFIER IS MISSING. (B35)
1503	INVALID NUMERIC FIELD FOR INTEGRATION TIME. (B34)
1504	INTEGRATION TIME IS NOT REPORTED TO TWO DECIMAL PLACES. (B34)
1505	INVALID NUMERIC FIELD FOR LINEAR RANGE CONCENTRATION. (B34)
1506	LINEAR RANGE CONCENTRATION IS NOT REPORTED TO TWO DECIMAL PLACES. (B34)
1507	INTEGRATION TIME IS MISSING. (B34)
1508	LINEAR RANGE CONCENTRATION IS MISSING. (B34)
1509	DATE IS MISSING. (B34)
1510	DATE IS FORMATTED INCORRECTLY. (B34)
1511	ICP ID NO. IS MISSING. (B34)
1512	CONCENTRATION AND INTEGRATION TIME IS MISSING FOR ICP ID NO. (B34)
1513	INSTRUMENT LINEAR RANGE WAS DETERMINED MORE THAN THREE MONTHS BEFORE THE DATE OF ANALYSIS. (E15)

TECHNICAL DEFECT REPORT - DEFECT CODES AND TEXT (CONT.)

DEFECT CODE	DEFECT TEXT
1514	INSTRUMENT LINEAR RANGE WAS DETERMINED AFTER THE DATE OF ANALYSIS. (E15)
1600	FORM 13 IS MISSING. (B35)
1601	EPA SAMPLE NO. IS NOT IN ALPHANUMERIC ORDER. (B35)
1602	EPA SAMPLE NO. IS NOT A VALID ENTRY FOR FORM 13. (B35)
1603	PREPARATION DATE IS MISSING. (B35)
1604	PREPARATION DATE IS FORMATTED INCORRECTLY. (B35)
1605	METHOD OF ANALYSIS IS MISSING. (B35)
1606	METHOD OF ANALYSIS IS NOT AN ACCEPTABLE CODE. (B35)
1607	THE FINAL VOLUME IS MISSING. (B35)
1608	INVALID NUMERIC FIELD FOR FINAL VOLUME. (B35)
1609	THE FINAL VOLUME IS NOT REPORTED TO THE NEAREST WHOLE NUMBER. (B35)
1610	THE FINAL VOLUME IS INCORRECT. (B35)
1611	THE WET WEIGHT IS REPORTED FOR A WATER SAMPLE. (B35)
1612	THE WET WEIGHT IS MISSING FOR SOIL SAMPLE. (B35)
1613	INVALID NUMERIC FIELD FOR WET WEIGHT. (B35)
1614	THE WET WEIGHT IS NOT REPORTED TO TWO DECIMAL PLACES FOR SOIL SAMPLES. (B35)
1615	THE WET WEIGHT IS INCORRECT. (B35)
1616	LCS IS MISSING FOR THE BATCH. (B35)
1617	PREPARATION BLANK IS MISSING FOR THE BATCH. (B35)
1700	FORM 14 IS MISSING. (B37)
1701	DILUTION FACTOR IS MISSING. (B37)
1702	INVALID NUMERIC FIELD FOR DILUTION FACTOR. (B37)
1703	DILUTION FACTOR IS NOT REPORTED TO TWO DECIMAL PLACES. (B37)
1704	SERIAL DILUTION IS NOT PERFORMED AT 5X FOR THE ANALYTE. (B36)
1705	METHOD CODE IS MISSING. (B36)
1706	METHOD CODE IS NOT AN ACCEPTABLE CODE. (B36)
1707	INSTRUMENT ID NUMBER IS MISSING. (B36)
1708	START DATE IS MISSING. (B36)
1709	START DATE IS FORMATTED INCORRECTLY. (B36)
1710	END DATE IS MISSING. (B36)
1711	END DATE IS FORMATTED INCORRECTLY. (B36)
1712	PREPARATION DATE EXCEEDS ANALYSIS DATE. (B36)
1713	DATE RECEIVED EXCEEDS ANALYSIS DATE. (B36)
1714	HOLDING TIME IS EXCEEDED. (B36)
1715	SAMPLE WAS NOT RUN INITIALY UNDILUTED. (A3)
1716	EPA SAMPLE NO. IS NOT IDENTIFIED CORRECTLY. (B36)
1717	ANALYTICAL SPIKE IS NOT PERFORMED. (B36)
1718	ANALYTICAL SPIKE IS NOT PERFORMED AT THE SAME DILUTION AS SAMPLE. (B36)
1719	PERCENT RECOVERY FOR THE FURNACE ANALYTICAL SPIKE IS MISSING. (B36)
1720	THE MSA TREE WAS NOT FOLLOWED CORRECTLY. (E14)
1721	PREPARATION BLANK ANALYTICAL SPIKE RECOVERY IS OUT OF SOW SPECIFIED RANGE. (E17)
1722	TEMPORAL ORDER IS NOT FOLLOWED. (B36)
1723	TIME BETWEEN LAST SAMPLE AND CCV EXCEEDS LEAST TIME BETWEEN SAMPLES. (E6)
1724	TIME BETWEEN CCV AND CCB EXCEEDS LEAST TIME BETWEEN SAMPLES. (E6)
1725	TIME IS MISSING. (B37)
1726	TIME IS NOT IN THE CORRECT FORMAT. (B37)
1727	THE TWO HOUR CCV CALIBRATION TIME LIMIT IS VIOLATED. (E5)
1728	THE TWO HOUR CCB CALIBRATION TIME LIMIT IS VIOLATED. (E5)
1729	CRI WAS NOT ANALYZED TWICE WITHIN THE 8 HOUR WORKING SHIFT. (E6)
1730	ICS WAS NOT ANALYZED TWICE WITHIN THE 8 HOUR WORKING SHIFT. (E8)
1731	ICS WAS NOT ANALYZED TWICE WITHIN THE 8 HOUR WORKING SHIFT. (E8)
1733	THE 10% CALIBRATION FREQUENCY IS VIOLATED. (E5,E6)
1734	INSTRUMENT CALIBRATION IS NOT PERFORMED WITH PROPER NUMBER OF STANDARDS. (E4)
1735	ICV WAS NOT PERFORMED AFTER CALIBRATION. (E4)

TECHNICAL DEFECT REPORT - DEFECT CODES AND TEXT (CONT.)

DEFECT CODE	DEFECT TEXT
1736	ICV/ICB WAS NOT PERFORMED AFTER CALIBRATION. (E4)
1737	CCV WAS NOT PERFORMED BEFORE CCB. (E4)
1738	CRI/ICS WERE NOT PERFORMED AFTER CALIBRATION. (E4)
1739	CRA WAS NOT PERFORMED AFTER CALIBRATION. (E4)
1740	ICB WAS NOT PERFORMED AFTER ICV. (E6)
1741	CRI/ICS/CCV WERE NOT PERFORMED AFTER ICB. (E6)
1742	CRA/CCV WERE NOT PERFORMED AFTER ICB. (E6)
1743	CCB WAS NOT PERFORMED AFTER CCV. (E6)
1744	CRI/ICS WERE NOT PERFORMED AFTER CCB. (E6)
1745	CRA WAS NOT PERFORMED AFTER CCB. (E6)
1746	ICS WAS NOT PERFORMED AFTER CALIBRATION. (E4)
1747	CRI WAS NOT PERFORMED AFTER CALIBRATION. (E4)
1748	CCB WAS NOT PERFORMED AT THE END OF THE RUN. (E5,E8)
1749	CCV WAS NOT PERFORMED AT THE END OF THE RUN. (E5,E8)
1750	CRI/ICS WERE NOT PERFORMED AT THE END OF THE RUN. (E5,E8)
1751	CCV WAS NOT PERFORMED AT THE END OF THE RUN. (E5,E8)
1752	ICS WAS NOT PERFORMED AT THE END OF THE RUN. (E5,E8)
1753	CRI WAS NOT PERFORMED AT THE END OF THE RUN. (E5,E8)
1754	BLANK STANDARD IS MISSING. (E3)
1755	INSTRUMENT CALIBRATION WAS NOT PERFORMED WITHIN 24 HOURS OF ANALYSIS. (E3)

Appendix C
LISTING OF DEFECT STATEMENTS

CONTRACT COMPLIANCE SCREENING
INORGANIC
LISTING OF DEFECT STATEMENTS

JANUARY 1990

CONTRACT COMPLIANCE SCREENING
INORGANIC
LISTING OF DEFECT STATEMENTS

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Criterion A
Cover Page

		(SOW Reference)
1.	Cover Page is missing.	(B16,A3)
2.	Lab Name is missing.	(B14)
3.	Contract No. is missing.	(B14)
4.	EPA Contract No. is missing hyphens. (*B*)	(B14)
5.	Lab Code is missing.	(B14)
6.	Case No. is missing.	(B14)
7.	SOW No. is missing.	(B16)
8.	SOW No. is incorrect.	(B16)
9.	Question one is not answered. (*B*)	(B17)
10.	Question one is answered incorrectly. (*B*)	(B17)
11.	Question two is not answered. (*B*)	(B17)
12.	Question two is answered incorrectly. (*B*)	(B17)
13.	Question Three is answered incorrectly. (*B*)	(B17)
14.	Question Three is not left blank. (*B*)	(B17)
15.	EPA Sample No. is not in alphanumeric order.	(B17)
16.	EPA Sample No. is not unique.	(B17)

Criterion B
Form 1
Data Sheet

		(SOW Reference)
1.	Form 1 is missing.	(B17)
2.	Form 1 M qualifier is missing.	(B18)
3.	Form 1 M qualifier is incorrect.	(B18)
4.	EPA Sample No. is missing.	(B15)
5.	EPA Sample No. is not reported on cover page.	(B15)
6.	Lab Sample ID is inconsistent with the cover page.	(B15)
7.	Matrix is missing.	(B15)
8.	Matrix is incorrect.	(B15)
9.	Level is missing.	(B15)
10.	Level is incorrect.	(B15)
11.	Date received is missing.	(B17)
12.	Date received is formatted incorrectly.	(B17)
13.	% Solids is missing.	(B17)
14.	% Solids is formatted incorrectly.	(B17)
15.	Concentration units are missing.	(B18)
16.	Color before is missing. (*B*)	(B18,B19)
17.	Color after is missing. (*B*)	(B18,B19)
18.	Clarity before is missing. (*B*)	(B18,B19)
19.	Clarity after is missing. (*B*)	(B18,B19)
20.	Concentration units are inconsistent with the sample matrix.	(B7, B17)
21.	% Solids is inconsistent with the sample matrix. (*B*)	(B17)
22.	Texture is missing. (*B*)	(B19)
23.	Artifacts are missing. (*B*)	(B19)
24.	This element is X'D more than once in Form 14.	(B17)
25.	Preparation log (Form 13) does not contain data for the element.	(B17, B37)
26.	Analysis run log (Form 14) does not contain data for the element.	(B17, B35)
27.	Invalid numeric field for the sample concentration. (*B*)	(B17, B36)
28.	Concentration flag in Form 1 column C is incorrect.	(B17, B18)
29.	Form 1 Q qualifier is missing/incorrect.	(B17, B18)
30.	Reported concentration is not to the required significant figures.	(B7)
31.	Concentration flag in Form 1 column C disagrees with the reported concentration.	(B18)
32.	Sample values are invalid because the IDL exceeds the CRDL and reported values are less than 5X IDL.	(C1)
33.	ICP linear range (Form 12) does not contain data for the element.	(B17)
34.	Concentration reported on Form 1 was obtained from a value exceeding the linear range.	(B34, D1)

Criterion CA
Form 2A
Calibration

		(SOW Reference)
1.	Form 2A is missing.	(B19)
2.	M column method is missing.	(B20)
3.	M column method is incorrect.	(B20)
4.	Initial calibration source is missing.	(B19)
5.	Continuing calibration source is missing.	(B19)
6.	Initial and Continuing calibration values are missing for method used.	(B19,B20)
7.	Continuing calibration values are missing for method used.	(B19, B20)
8.	An ICV with no corresponding CCV.	(B20)
9.	CCVs are not listed in increasing temporal order of analysis.	(B36)
10.	Initial calibration true value is missing.	(B19)
11.	Continuing calibration true value is missing.	(B20)
12.	Initial calibration %R is missing.	(B19)
13.	Continuing calibration %R is missing.	(B20)
14.	Initial calibration true value is not reported to one decimal place. (*B*)	(B19)
15.	Initial calibration found value is not reported to two decimal places. (*B*)	(B19)
16.	Initial calibration %R value is not reported to one decimal places.	(B19)
17.	Initial calibration %R is incorrect.	(B19)
18.	Continuing calibration true value is not reported to one decimal place.	(B20)
19.	Continuing calibration found value is not reported to two decimal places.	(B20)
20.	Continuing calibration %R is not reported to one decimal place.	(B20)
21.	Continuing calibration %R is incorrect.	(B20)
22.	Initial calibration %R is outside the specified control limits.	(E5)
23.	Continuing calibration %R is outside the specified control limit.	(E5)
24.	The same continuing calibration standard is not used throughout the case.	(E6)
25.	ICVs on Forms 2A and 14 do not correspond.	(B20,B36)
26.	CCVs on Forms 2A and 14 do not correspond.	(B20,B36)

Criterion CB
Form 2B
CRDL Standard for AA and ICP

		(SOW Reference)
1.	Form 2B is missing.	(B21)
2.	AA CRDL standard source is missing.	(B21)
3.	ICP CRDL standard source is missing.	(B21)
4.	AA CRDL standard for method used is missing.	(B21)
5.	CRDL standard for AA true value is missing.	(B21)
6.	CRDL standard for AA true value is not reported to one decimal place.	(B21)
7.	CRDL standard for AA found value is missing.	(B21)
8.	CRDL standard for AA found value is not reported to two decimal places.	(B21)
9.	%R for AA is missing.	(B21)
10.	%R for AA is not reported to one decimal place.	(B21)
11.	%R for AA is incorrect.	(B21)
12.	CRDL standard for AA is not at the CRDL.	(B21,E6)
13.	ICP CRDL standard for method used is missing.	(B21)
14.	CRDL standard for ICP true value is missing.	(B21)
15.	CRDL standard for ICP true value is not reported to one decimal place.	(B21)
16.	CRDL standard for ICP found value is missing.	(B21)
17.	CRDL standard for ICP found value is not reported to two decimal places.	(B21)
18.	%R for ICP is missing.	(B22)
19.	%R for ICP is not reported to one decimal place.	(B22)
20.	%R for ICP is incorrect.	(B22)
21.	CRDL standard for ICP not run at two times the CRDL when CRDL is greater than the IDL.	(B21,E6)
22.	CRDL standard for ICP not run at two times the IDL when IDL is greater than the CRDL.	(B21,E6)
23.	CRAs on Form 2A and Form 14 do not correspond.	(B21,B36)
24.	CRIs on Form 2A and Form 14 do not correspond.	(B21,B36)

Criterion D
Form 3
Blanks

		(SOW Reference)
1.	Form 3 is missing.	(B22)
2.	M qualifier is missing.	(B23)
3.	M qualifier is incorrect.	(B23)
4.	Preparation blank matrix is missing.	(B23)
5.	Preparation blank matrix is reported incorrectly.	(B23)
6.	Preparation blank concentration units are missing.	(B23,E8)
7.	Preparation blank concentration units are incorrect.	(B23,E8)
8.	Preparation blank concentration units are inconsistent with matrix.	(B22,E8)
9.	Initial and continuing calibration blanks are missing for method used.	(B23,E6-E8)
10.	Initial calibration column C qualifier is missing.	(B23)
11.	Initial calibration column C qualifier is incorrect.	(B23)
12.	Continuing calibration column C qualifier is missing.	(B23)
13.	Continuing calibration column C qualifier is incorrect.	(B23)
14.	Absolute value of initial calibration blank exceeds the CRDL.	(E7/C1)
15.	Absolute value of continuing calibration blank exceeds the CRDL.	(E7/C1)
16.	Absolute value of initial calibration blank exceeds the IDL (IDL > CRDL).	(E7/C1)
17.	Absolute value of continuing calibration blank exceeds the IDL (IDL > CRDL).	(E7/C1)
18.	Initial calibration blank is not reported to one decimal place.	(B23,E6-E8)
19.	Continuing calibration blank is not reported to one decimal place.	(B23,E6-E8)
20.	ICBs on Forms 3 and 14 do not correspond.	(B22,B36)
21.	CCBs on Forms 3 and 14 do not correspond.	(B23,B36)
22.	Preparation blank is missing.	(B23,E6-E8)
23.	Preparation blank column C qualifier is incorrect.	(B23)
24.	Preparation blank for soil is not reported to three decimal places.	(B23)
25.	Aqueous preparation blank is not reported correctly.	(B23)
26.	Sample value is less than 10 times the preparation blank value and the preparation blank exceeds the CRDL.	(E7)
27.	Sample value is below 10 times CRDL and the preparation blank value is below the negative CRDL.	(E7)
28.	Soil preparation blank on Form 3 is not the same as on Form 14.	(B23,B36)
29.	Aqueous preparation blank on Form 3 is not the same as on Form 14.	(B23,B36)

Criterion E
Form 4
Interference Check Sample

		(SOW Reference)
1.	Form 4 is missing.	(B24)
2.	ICP ID No. is missing.	(B24)
3.	ICS source ID is missing.	(B24)
4.	True values for solution A are missing.	(B24)
5.	True values for solution AB are missing.	(B24)
6.	True values for solution A are not reported to the nearest whole number.	(B24)
7.	True values for solution AB are not reported to the nearest whole number.	(B24)
8.	Initial values for solution A are missing.	(B24)
9.	Initial values for solution AB are missing.	(B24)
10.	Initial solution A values are not reported to the nearest whole number.	(B24)
11.	Initial solution AB values are not reported to one decimal place.	(B24)
12.	%R for initial found value is outside the specified control limits	(B24)
13.	%R is missing for initial found value.	(B24)
14.	%R is not reported to one decimal place for initial found value.	(B24)
15.	%R is incorrect for initial found value.(B24)	
16.	Final values for solution A are missing.	(B24)
17.	Final values for solution AB are missing.	(B24)
18.	Final solution A values are not reported to the nearest whole number.	(B24)
19.	Final solution AB values are not reported to one decimal place.	(B24)
20.	%R for final found value is outside the specified control limits.	(B24)
21.	%R is missing for final found value.	(B24)
22.	%R is not reported to one decimal place for final found value.	(B24)
23.	%R is incorrect for final found value.	(B24)
24.	Initial ICS (A/AB) exceeds the linear range.	(B36, D1)
25.	Final ICS (A/AB) exceeds the linear range.	(B36, D1)
26.	ICS on Forms 4 and 14 do not correspond.	(B24,B36)

Criterion FA
Form 5A
Spike

		(SOW Reference)
1.	Form 5A is missing.	(B25)
2.	M qualifier is missing.	(B27)
3.	M qualifier is incorrect.	(B27)
4.	Matrix is missing.	(B25)
5.	Matrix is incorrect.	(B25)
6.	Level is missing.	(B25)
7.	Level is incorrect.	(B25)
8.	Concentration units are missing.	(B25)
9.	Concentration units are incorrect.	(B25)
10.	% Solids is missing.	(B25)
11.	% Solids is formatted incorrectly.	(B25)
12.	% Solids is not the same as Form 1 % Solids.	(B25)
13.	Concentration units are inconsistent with matrix.	(B25)
14.	% Solids is inconsistent with matrix.	(B25)
15.	EPA Sample No. is missing.	(B25)
16.	EPA Sample No. is missing a (S) suffix. (*B*)	(B11)
17.	EPA Sample No. is not reported on cover page.	(B11)
18.	This element is X'D more than once in Form 14.	(B37)
19.	Preparation log (Form 13) does not contain data for the sample result.	(B37)
20.	Analysis run log (Form 14) does not contain data for the sample result.	(B37)
21.	Preparation log (Form 13) does not contain data for the spike sample result.	(B37)
22.	Analysis run log (Form 14) does not contain data for the spike sample result.	(B37)
23.	Spike sample result, Sample result, and Spike added is missing for the method used. (*B*)	(E9)
24.	Control limits are incorrect.	(B25)
25.	Invalid numeric field for spiked sample result.	(B25)
26.	Spike sample result is not reported to four decimal places.	(B25)
27.	Invalid numeric field for sample result.	(B25)

Criterion FA (continued)
Form 5A
Spike

		(SOW Reference)
28.	Sample result is not reported to four decimal places.	(B25)
29.	Invalid numeric field for spike added.	(B25)
30.	Spike added is not reported to two decimal places.	(B25)
31.	Spike sample result C qualifier is incorrect.	(B25)
32.	Sample result C qualifier is incorrect.	(B25)
33.	Invalid numeric field for %R.	(B25)
34.	%R is not reported to one decimal place.	(B26)
35.	Q qualifier is incorrect.	(B25)
36.	Spike added is missing.	(B25)
37.	Spike added is incorrect.	(B25)
38.	%R is missing.	(B26)
39.	%R is incorrect.	(B26)
40.	Control limits are not left empty when the sample is four times greater than the spike added. (*B*)	(B25,E10)
41.	Control limits are missing. (*B*)	(B26)
42.	Q qualifier is missing.	(B26)
43.	Sample result concentration is not the same as Form 1 concentration.	(B25,B26)
44.	Spike sample result exceeds linear range.	(B36)

Criterion FB
Form 5B
Post-Digest Spike

		(SOW Reference)
1.	Form 5B is missing. (*B*)	(B26)
2.	M qualifier is missing. (*B*)	(B27)
3.	M qualifier is incorrect. (*B*)	(B27)
4.	Matrix is missing. (*B*)	(B26)
5.	Matrix is incorrect. (*B*)	(B26)
6.	Level is missing.	(B26)
7.	Level is incorrect.	(B26)
8.	EPA Sample No. is missing.	(B26)
9.	EPA Sample No. is missing an (A) suffix.	(B11)
10.	This element is X'D more than once in Form 14.	(B37)
11.	Preparation log (Form 13) does not contain data for the sample result.	(B35)
12.	Analysis run log (Form 14) does not contain data for the sample result.	(B37)
13.	Preparation log (Form 13) does not contain data for the spike sample result.	(B35)
14.	Analysis run log (Form 14) does not contain data for the spike sample result.	(B37)
15.	Spike sample result, Sample result, and Spike added is missing for the method used.	(B26)
16.	Post digest spike is not required.	(B36, E10)
17.	Control limit is reported when it should be blank.	(B26)
18.	Invalid numeric field for spiked sample result.	(B26)
19.	Spike sample result is not reported to two decimal places.	(B26)
20.	Invalid numeric field for sample result.	(B26)
21.	Sample result is not reported to two decimal places.	(B26)
22.	Invalid numeric field for spike added.	(B26)
23.	Spike added is not reported to one decimal place.	(B27)
24.	Spike sample result C qualifier is missing.	(B26)
24.	Spike sample result C qualifier is incorrect.	(B26)
25.	Sample result C qualifier is missing.	(B26)
25.	Sample result C qualifier is incorrect.	(B26)
26.	Invalid numeric field for %R.	(B27)
27.	%R is not reported to one decimal place.	(B27)
28.	Q qualifier is not left blank.	(B26)
29.	Spike added is missing.	(B27)
30.	Spike added is not added at the greater of two times CRDL or twice the sample value.	(B23,E9)
31.	%R is missing.	(B27)
32.	%R is incorrect.	(B27)
33.	Sample result concentration is not the same as Form 1 concentration.	(B26,B27)
34.	Spike result exceeds linear range.	(B36, D1)

Criterion G
Form 6
Duplicate

		(SOW Reference)
1.	Form 6 is missing.	(B27)
2.	M qualifier is missing.	(B28)
3.	M qualifier is incorrect.	(B27)
4.	Matrix is missing.	(B27)
5.	Matrix is incorrect.	(B27)
6.	Level is missing.	(B27)
7.	Level is incorrect.	(B27)
8.	Concentration units are missing.	(B27)
9.	Concentration units are incorrect.	(B27)
10.	% Solids for sample is missing.	(B27)
11.	% Solids for sample is formatted incorrectly.	(B27)
12.	Sample % solids is inconsistent with Form 1 % solids.	(B27)
13.	% Solids for duplicate is missing.	(B27)
14.	% Solids for duplicate is formatted incorrectly.	(B27)
15.	Concentration units are inconsistent with matrix.	(B27)
16.	% Solids for sample is incorrect.	(B27)
17.	% Solids for duplicate is incorrect.	(B27)
18.	EPA Sample No. is missing.	(B27)
19.	EPA Sample No. is missing a (D) suffix. (*B*)	(B11)
20.	Form 6 EPA Sample No. does not have a corresponding Form 1 sample.	(B11)
21.	EPA Sample No. is not listed on cover page.	(B11)
22.	This element is X'D more than once in Form 14.	(B37)
23.	Preparation log (Form 13) does not contain data for the sample result.	(B35)
24.	Analysis run log (Form 14) does not contain data for the sample result.	(B36)
25.	Preparation log (Form 13) does not contain data for the duplicate result.	(B35)
26.	Analysis run log (Form 14) does not contain data for the duplicate result.	(B37)
27.	Invalid numeric field for control limit.	(B28)
28.	Control limit is not reported to one decimal place.	(B27)

Criterion G (continued)
Form 6
Duplicate

		(SOW Reference)
29.	Invalid numeric field for sample value.	(B28)
30.	Sample result is not reported to four decimal places.	(B28)
31.	Sample result C qualifier is incorrect.	(B28)
32.	Invalid numeric field for duplicate value.	(B28)
33.	Duplicate result is not reported to four decimal places.	(B28)
34.	Duplicate result C qualifier is incorrect.	(B28)
35.	Invalid numeric field for RPD.	(B28)
36.	RPD is not reported to one decimal place.	(B28)
37.	Q qualifier is incorrect.	(B28)
38.	Sample and duplicate results are missing for the alternate method used.	(B27,B28)
39.	Control limit is missing.	(B27)
40.	Control limit is incorrect.	(B27)
41.	Control limit is not left empty when sample or duplicate is greater than five times CRDL. (*B*)	(B27)
42.	RPD is missing.	(B28)
43.	RPD is incorrect.	(B28)
44.	Q qualifier is missing.	(B28)
45.	Sample result concentration is not the same as Form 1 concentration.	(B27,B28)
46.	Duplicate result exceeds linear range.	(B36, D1)
47.	EPA Sample No. does not have corresponding Form 6.	(B21)
48.	Reported concentration on Form 8 is not the same as on Form 6.	(B21)

Criterion H
Form 7
Laboratory Control Sample

		(SOW Reference)
1.	Form 7 is missing.	(B29)
2.	Solid LCS Source ID is missing. (*B*)	(B29)
3.	Aqueous LCS Source ID is missing. (*B*)	(B29)
4.	LCS is missing for method/matrix.	(B29)
5.	No. of LCS' on Form 7 is not the same as on Form 14 for the element.	(B29, B36)
6.	Aqueous LCS is missing for the element.	(B29)
7.	Aqueous true value is not reported to one decimal place.	(B29)
8.	Aqueous found value is missing.	(B29)
9.	Aqueous found value is not reported to two decimal places.	(B29)
10.	Aqueous true value is missing.	(B29)
11.	Aqueous %R is missing.	(B29)
12.	Aqueous %R is not reported to one decimal place.	(B29)
13.	Aqueous %R is incorrect.	(B29)
14.	Aqueous %R is outside control limits.	(B29)
15.	Solid LCS is missing for the element.	(B29, E13)
16.	Solid true value is not reported to one decimal place.	(B29)
17.	Solid found value is missing.	(B29)
18.	Solid found value is not reported to one decimal place.	(B29)
19.	Solid true value is missing.	(B29)
20.	Solid LCS column C qualifier is incorrect.	(B29)
21.	Solid LCS lower limit value is missing.	(B29)
22.	Solid LCS lower limit value is not reported to one decimal place.	(B29)
23.	Solid LCS upper limit value is missing.	(B29)
24.	Solid LCS upper limit value is not reported to one decimal place.	(B29)
25.	Solid LCS found value is outside the control limits.	(B29)
26.	Solid LCS %R is missing.	(B29, E13)
27.	Solid LCS %R is not reported to one decimal place.	(B29)
28.	Solid LCS %R is incorrect.	(B29)

Criterion I
Form 8
MSA

		(SOW Reference)
1.	Form 8 is missing.	(B30)
2.	EPA Sample No's are not in alphanumeric order.	(B30)
3.	MSA was incorrectly done on LCS.	(B30, E16)
4.	MSA was incorrectly done on Prep. Blank.	(B30, E16)
5.	EPA Sample No. is incorrect.	(B30)
6.	Analyte is missing.	(B30)
7.	Compliance cannot be determined - shift in the data fields.	(B30)
8.	Zero added absorbance is missing.	(B30)
9.	Zero added absorbance is not reported to three decimal places.	(B30)
10.	First added concentration is missing.	(B30)
11.	First added concentration is not reported to two decimal places.	(B30)
12.	First added absorbance is missing.	(B30)
13.	First added absorbance is not reported to three decimal places.	(B30)
14.	Second added concentration is missing.	(B30)
15.	Second added concentration is not reported to two decimal places.	(B30)
16.	Second added absorbance is missing.	(B30)
17.	Second added absorbance is not reported to three decimal places.	(B30)
18.	Third added concentration is missing.	(B30)
19.	Third added concentration is not reported to two decimal places.	(B30)
20.	Third added absorbance is missing.	(B30)
21.	Third added absorbance is not reported to three decimal places.	(B30)
22.	First added concentration is not at the appropriate level. (*B*)	(E17)
23.	Second added concentration is not at the appropriate level. (*B*)	(E17)
24.	Third added concentration is not at the appropriate level. (*B*)	(E17)
25.	Final concentration is missing.	(B31)
26.	Final concentration is not reported to one decimal place.	(B31)
27.	R value is missing.	(B31)
28.	R value is not reported to four decimal places.	(B31)

Criterion I (continued)
Form 8
MSA

		(SOW Reference)
29.	R value is not consistent with reported data.	(B31)
30.	Q qualifier is incorrect.	(B31)
31.	Q qualifier is missing.	(B31)
32.	EPA Sample No. is not reported on cover page.	(B30)
33.	There is no data on Form 14 for the MSA.	(B30)
34.	Final concentration is inconsistent with the reported data.	(B31)
35.	EPA Sample No. does not have a corresponding Form 1.	(B21)
36.	Reported concentration on Form 1 is not the same as on Form 8.	(B21)
37.	EPA Sample No. on Form 8 does not have a corresponding Form 5A.	(B21)
38.	Reported concentration on Form 8 is not the same as on Form 5A.	(B21)
39.	EPA Sample No. on Form 8 does not have a corresponding Form 6.	(B21)
40.	Reported concentration on Form 8 is not the same as on Form 6.	(B21)

Criterion J
Form 9
Serial Dilution

		(SOW Reference)
1.	Form 9 is missing.	(B31)
2.	M qualifier is missing. (*B*)	(B32)
3.	M qualifier is incorrect. (*B*)	(B32)
4.	EPA Sample No. does not have a corresponding Form 1.	(B32)
5.	Matrix is missing.	(B31)
6.	Matrix is incorrect.	(B31)
7.	Level is missing.	(B31)
8.	Level is incorrect.	(B31)
9.	EPA Sample No. is missing.	(B31)
10.	EPA Sample No. is missing an (L) suffix.	(B11)
11.	This element is X'D more than once in Form 14.	(B31)
12.	Preparation log (Form 13) does not contain data for the initial sample result.	(B31, B35)
13.	Analysis run log (Form 14) does not contain data for the initial sample result.	(B31, B36)
14.	Analysis run log (Form 14) does not contain data for the serial dilution result.	(B31, B36)
15.	Serial dilution is missing for method used.	(B31)
16.	Invalid numeric field for the Initial Sample Result.	(B31)
17.	Initial Sample Result is not reported to two decimal places.	(B31)
18.	Initial Sample Result C qualifier is incorrect.	(B31)
19.	Invalid numeric field for the Serial Dilution Result.	(B31)
20.	Serial Dilution Result is not reported to two decimal places.	(B31)
21.	Serial Dilution Result C qualifier is incorrect.	(B31)
22.	Invalid numeric field for the % difference.	(B31)
23.	% Difference is not reported to one decimal place.	(B31)
24.	Q qualifier is incorrect.	(B32)
25.	Serial Dilution Result is missing.	(B31)
26.	% difference is missing.	(B32)
27.	% difference is incorrect.	(B32)
28.	Q qualifier is missing.	(B32)
29.	Initial Sample Result concentration disagrees with Form 1 concentration.	(B31)

Criterion J (Continued)
Form 9
Serial Dilution

30. Serial Dilution Result exceeds linear range. (B32, D1)

31. % difference is not required. (*B*) (B32)

Criterion L
Form 10
IDL

		(SOW Reference)
1.	Form 10 is missing.	(B32)
2.	IDL is missing.	(B32)
3.	M qualifier is missing.	(B33)
4.	M qualifier is incorrect.	(B33)
5.	IDL is not reported to one decimal place.	(B32)
6.	IDL is not reported to a whole number.	(B33)
7.	Wavelength is missing.	(B32)
8.	Wavelength is not reported to two decimal places.	(B32)
9.	Background code is missing.	(B33)
10.	Background code is incorrect.	(B33)
11.	Date is missing.	(B32)
12.	Date is formatted incorrectly.	(B32)
13.	ICP ID Number is missing.	(B32)
14.	Furnace ID Number is missing.	(B32)
15.	Flame ID Number is missing.	(B32)
16.	Instrument IDLs were detemined after date of analysis.	(E14)
17.	Instrument IDLs were detemined more than three months before the date of analysis.	(E14)
18.	There is no IDL on Form 10 corresponding to instrument used for the elements' anlysis.	(B32, E14)

Criterion M
Form 11
Correction Factors

(SOW Reference)

1.	Form 11 is missing.	(B33)
2.	Wavelength is not reported to two decimal places.	(B33)
3.	Date is missing.	(B33)
4.	Date is formatted incorrectly.	(B33)
5.	ICP ID No. is missing.	(B33)
6.	Wavelength is missing.	(B33)
7.	[ ] Interelement correction factor is missing.	(B34)
8.	[ ] Interelement correction factor is not reported to seven decimal places.	(B34)
9.	[ ] Interelement factors were determined after date of analysis.	(B33)
10.	Interelement factors were determined more than one year from date of analysis.	(B33)

Criterion N
Form 12
Linear Range

		(SOW Reference)
1.	Form 12 is missing.	(B34)
2.	M qualifier is reported improperly.	(B35)
3.	M qualifier is missing.	(B35)
4.	Invalid numeric field for integration time.	(B34)
5.	Integration time is not reported to two decimal places.	(B34)
6.	Invalid numeric field for linear range concentration.	(B34)
7.	Linear range concentration is not reported to two decimal places.	(B34, H22)
8.	Integration time is missing.	(B34)
9.	Linear range concentration is missing.	(B34)
10.	Date is missing.	(B34)
11.	Date is formatted incorrectly.	(B34)
12.	ICP ID No. is missing.	(B34)
13.	Linear range is missing for ICP ID No.	(B34)
14.	Instrument linear range was determined more than three months before the date of analysis.	(B34, E15)
15.	Instrument linear range was determined after the date of analysis.	(B34, E15)

Criterion R
Form 13
Preparations

		(SOW Reference)
1.	Form 13 is missing.	(B35)
2.	EPA Sample No. is not in alphanumeric order.	(B35)
3.	EPA Sample No. is not a valid entry for Form 13.	(B35)
4.	Preparation date is missing.	(B35)
5.	Preparation date is formatted incorrectly.	(B35)
6.	Method of analysis is missing.	(B35)
7.	Method of analysis is not an acceptable code.	(B35)
8.	The final volume is missing.	(B35)
9.	Invalid numeric field for final volume.	(B35)
10.	The final volume is not reported to the nearest whole number.	(B35)
11.	The final volume is incorrect.	(B35)
12.	The wet weight is reported for a water sample.	(B35)
13.	The wet weight is missing for soil sample.	(B35)
14.	Invalid numeric field for wet weight.	(B35)
15.	The wet weight is not reported to two decimal places for soil samples.	(B35)
16.	The wet weight is incorrect.	(B35)
17.	LCS is missing for the batch.	(B35, E13)
18.	Preparation Blank is missing for the batch.	(B35, E7)

Criterion RA
Form 14
Analysis Run Log

		(SOW Reference)
1.	Form 14 is missing.	(B36)
2.	Dilution factor is missing.	(B36)
3.	Invalid numeric field for dilution factor.	(B37)
4.	Dilution factor is not reported to two decimal places.	(B37)
5.	Serial dilution is not performed at 5x for the analyte.	(B36)
6.	Method code is missing.	(B36)
7.	Method code is not an acceptable code.	(B36)
8.	Instrument ID number is missing.	(B36)
9.	Start Date is missing.	(B36)
10.	Start Date is formatted incorrectly.	(B36)
11.	End Date is missing.	(B36)
12.	End Date is formatted incorrectly.	(B36)
13.	Preparation date exceeds analysis date.	(B36)
14.	Date received exceeds analysis date.	(B36)
15.	Holding time is exceeded.	(B36, D4)
16.	Sample was not run initially undiluted.	(A3, D1)
17.	EPA Sample No. is not identified correctly.	(B36, B11)
18.	Analytical spike is not performed.	(B36)
19.	Analytical spike is not performed at the same dilution as sample.	(B36, E16)
20.	Percent recovery for the furnace analytical spike is missing.	(B36)
21.	The MSA tree was not followed correctly.	(E18)
22.	Preparation blank analytical spike recovery is out of SOW specified range.	(E16)
23.	Temporal order is not followed.	(B36)
24.	Time between last sample and CCV exceeds time between samples.	(E6)
25.	Time between CCV and CCB exceeds time between samples.	(E6)
26.	Time is missing.	(B37)
27.	Time is not in the correct format.	(B37)
28.	The two hour CCV calibration time limit is violated.	(E5)

Criterion RA (continued)
Form 14
Analysis Run Log

		(SOW Reference)
29.	The two hour CCB calibration time limit is violated.	(E6)
30.	CRI was not analyzed twice within the 8 hour working shift.	(E6)
31.	ICS was not analyzed twice within the 8 hour working shift.	(E8)
32.	The 10% CCV calibration frequency is violated.	(E5,E6)
33.	The 10% CCB calibration frequency is violated.	(E6)
34.	Instrument calibration is not performed with proper number of standards.	(E4)
35.	ICV was not performed after calibration.	(E4)
36.	ICB was not performed after calibration.	(E4)
37.	CCV was not performed before CCB.	(E4)
38.	CRI/ICS were not performed after calibration.	(E4)
39.	CRA was not performed after calibration.	(E4)
40.	ICB was not performed after ICV.	(E6)
41.	CRI/ICS/CCV were not performed after ICB.	(E6, E8)
42.	CRA/CCV were not performed after ICB.	(E6)
43.	CCB was not performed after CCV.	(E6, E7)
44.	CRI/ICS were not performed after CCB.	(E6, E8)
45.	CRA was not performed after CCB.	(E6)
46.	ICS was not performed after calibration.	(E4)
47.	CRI was not performed after calibration.	(E4)
48.	CCB was not performed at the end of the run.	(E7,E8)
49.	CCV was not performed at the end of the run.	(E5,E8)
50.	CRI/ICS were not performed at the end of the run.	(E6,E8)
51.	CCV was not performed at the end of the run.	(E5,E8)
52.	ICS was not performed at the end of the run.	(E5,E8)
53.	CRI was not performed at the end of the run.	(E6)
54.	Instrument calibration was not performed within 24 hours of analysis.	(E3)

Criterion T
Raw Data, Traffic Reports
HardCopy Data Package Assessment

I. Raw Data Defect Messages

1) Compliance cannot be determined, raw data are not present for [field sample/required duplicate/required spike/TA analyte].

2) Compliance cannot be determined, raw data are not present for instrument calibration and for all [ICV/ICE/CCV/CCS/ICS/Preparation Blanks/LCS/Serial Dilutions/CRI (for ICP)/CRA (for AA)/Post Digestion Spike/Analytical Spike].

3) Duplicate exposures were not performed for run [Date/Time/Instrument ID/Analyte/Method].

4) Raw data for analytical run [Date/Time/Instrument ID/Analyte/Method] are missing

5) [EPA Sample Number] [identifying position in the run] on Form 14 is missing from raw data

6) Analysis of [sample] in raw data is missing from Form XIV [suffix].

7) Duplicate exposures were not performed for run [Date/Time/Instrument ID/Analyte/Method].

II. Traffic Report Defect Messages

1) TR not submitted.

2) [Date received/Recipient signature/Case No./SDG No./EPA Sample No./Lab Code] not reported on TR.

3) Required analyses are not performed as per Traffic Report.

Appendix D
DATA FORMATS
(SOW EXHIBIT H)

EXHIBIT H

DATA DICTIONARY AND FORMAT FOR DATA DELIVERABLES IN COMPUTER-READABLE FORMAT

		Page No.
SECTION I:	Description of Deliverables	H-1
SECTION II:	Format A Specification	H-3
SECTION III:	Format B Specification	H-26

SECTION I

DESCRIPTION OF DELIVERABLES

1. Introduction

1.1 Two file formats are specified for delivery of computer-readable data. Format A is oriented to the structure of the hardcopy reporting forms required by the contract. Format B is oriented to the general data required by the contract. Information sufficient to generate required hardcopy forms is contained in either format.

1.2 The file or files for a Sample Delivery Group (SDG, see Exhibit A, Section I, B) must be submitted on a diskette or diskettes (see paragraph, 2.1). Information on a diskette or diskettes for any single SDG must be in one, and only one, of the two formats. The format used is at the option of the laboratory. The option used must be included in the File Name specification (paragraph 2.2).

1.3 Format A consists of variable length ASCII records, and Format B consists of fixed-length 80-byte ASCII records.

1.4 All information for one SDG must be in one file if format A is used. Use of Format B may require information for one SDG to be in a number of files. Format B may require more than one 360 K diskette for a valid SDG.

2. Deliverable

2.1 The file or files must be submitted on a 5-1/4 inch floppy diskette, which may be either a double-sided, double density, 360 K-byte or a high capacity 1.2 M-byte, or 3.5 inch double-sided, double-density 720 K-byte or 1.44 M-byte, diskette. The diskette must be formatted and recorded using the MS-DOS Operating System. The diskette or diskettes must contain all information relevant to one and only one SDG, and must accompany the hardcopy package for the SDG submitted to the Sample Management Office (see Exhibit B). Information on the diskette or diskettes must correspond exactly with information submitted in the hardcopy data package and on the hardcopy data package forms. Blank or unused records in either format should not be included on the diskettes.

2.2 Each diskette must be identified with an external label containing (in this order) the following information:

Disk Density
File Name(s)
Laboratory Name (optional)
Laboratory Code
Case Number (where applicable)
SAS Number (where applicable)

The format for the File Name(s) must be XXXXXX.INY

where XXXXXX is the SDG identifier

I indicates Inorganics analysis

N is a continuation number used to identify multiple files corresponding to the same SDG. For Format A, "N" must be "1". For Format B, "N" must be "1" for the only, or first file of the SDG, and must be incremented to "2", "3", etc., for subsequent files of the SDG. "N" cannot be greater than 9

Y is "A" for Format A
or "B" for Format B

Dimensions of the label must be in the range 4-3/4" to 5" long by 1-1/4 to 1-1/2" wide.

SECTION II

FORMAT A SPECIFICATION

1. Format Characteristics

1.1 Format A is based upon the structure of the hardcopy reporting forms required by the contract. With two exceptions, Form Suffix and Record Type, all fields in the format correspond directly with entries or items on the hardcopy forms.

1.2 Format A includes detailed specifications for the required format of each Inorganic Reporting Form's HEADER and DETAIL records. The exact columns in which each field is to be contained are shown, as well as the length of the field. Each field's required contents are specified either as a literal (contained in single quotes) which must appear exactly as shown (without the quotes), or as a variable for which a format is listed in the format column. Each field's required format is specified either as an option of two or more choices (divided by slashes), as MM/DD/YY for a date, as a CHARACTER field, or as a NUMERIC field.

1.3 Format fields listed as CHARACTER may contain any standard ASCII characters, and must be left-justified and padded with blanks. Formats listed as NUMERIC may contain numeric digits, a decimal point, and a leading plus or minus sign, and must be right-justified and padded with blanks. The numbers following the word NUMERIC specify the maximum number of digits which are allowed on either side of the decimal. The decimal point is not assumed and must be contained in the field in its correct position. For example, the format "NUMERIC 3.2" allows 3 digits preceding the decimal point and 2 following it (a total length of 6 characters). The format "NUMERIC S3.2" allows a leading plus or minus sign (a total length of 7). If a field's format description does not contain a decimal point, then a decimal point is not allowed in the field. If a field's format description does not contain an "S", then a sign is not allowed in the field.

Explanation of NUMERIC fields in Format A.

In the examples below the format NUMERIC 3.2 is described.

(Quotation marks indicate limits of the field described and are not included in the format.)

If the value of the field is 10.1:
The columns in the format will appear as: "10.10" (six columns).

The table below demonstrates several examples:

Value	Appears on Format
10.1	"10.10"
10.11	"10.11"
100.11	"100.11"
100	"100.00"
.29	"0.29"
-100.129	Invalid
-10.1	Invalid

The following table presents examples of NUMERIC S3.2:

Value	Appears on Format
10.1	" 10.10" (seven columns)
-10.11	" -10.11"
-100.11	"-100.11"
-1000.1	Invalid
100	" 100.00"
-.22	" -0.22"
-.239	" -0.24"

2. Record Types

2.1 Format A consists of variable length ASCII records. The last two bytes of each record must contain "carriage return" and "line feed", respectively. Unused bytes in partially filled fields must be blank-filled.

2.2 Format A has three types of records: Header Records, Detail Records and Comment Records.

Type	Type ID	Contents
Header	H	Nonrepeating fields which together are unique to the associated hardcopy form
Detail	D	A group of fields that are repeated on a form, and are uniquely positioned by (e.g., Analyte Chemical Symbol)
Comment	C	Nonrepeating fields containing text that comments on information reported on the form

The format for Comment Records is the same for all forms, and is described after all other formats.

2.3 The first 5 bytes of each record contain the FORM ID, identifying the Inorganic Analysis Reporting Form for which the record contains data. The ID must be left-justified in the field.

FORM ID	FORM NAME
COVER	COVER PAGE - INORGANIC ANALYSES DATA PACKAGE
I	INORGANIC ANALYSIS DATA SHEET
II(1)	INITIAL AND CONTINUING CALIBRATION VERIFICATION
II(2)	CRDL STANDARD FOR AA AND ICP
III	BLANKS
IV	ICP INTERFERENCE CHECK SAMPLE
V(1)	SPIKE SAMPLE RECOVERY
V(2)	POST DIGEST SPIKE SAMPLE RECOVERY
VI	DUPLICATES
VII	LABORATORY CONTROL SAMPLE
VIII	STANDARD ADDITION RESULTS
IX	ICP SERIAL DILUTIONS
X	INSTRUMENT DETECTION LIMITS (QUARTERLY)
XI	ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)
XII	ICP LINEAR RANGES (QUARTERLY)
XIII	PREPARATION LOG
XIV	ANALYSIS RUN LOG

Following the FORM ID is a two-byte, left-justified, FORM SUFFIX, which must be unique for each set of records that correspond to one hardcopy form. For example, records for the first occurrence of a form must contain the suffix AA. Records for the second occurrence must contain AB, and the twenty-seventh occurrence would contain BA.

The 8th byte of each record contains the TYPE ID, which specifies what kind of data the record contains (see paragraph 2.2).

Records with the same FORM ID and FORM SUFFIX must be grouped together in the file. Within each FORM ID/FORM SUFFIX group, there may be only one HEADER record, and it must come first. DETAIL records must follow the HEADER record. The COMMENT records, which are optional, must come last in the group, and be in sequence corresponding to the form.

The FORM ID/FORM SUFFIX group(s) for the COVER PAGE(S) must come first in the file. After the COVER PAGE(S), the FORM ID/FORM SUFFIX groups do not have to be in any specific order. For example, a set of HEADER/DETAIL/COMMENT records for FORM V could come before records for FORM I, as long as the records within the group are in the correct order.

3. Record Length

Table 3.1 summarizes the length (excluding carriage return/line feed) and (in parentheses) the number of records in Format A. The maximum number of detail and comment records is shown, corresponding to a submission of hardcopy forms on which information is written on all possible lines.

Table 3.1 Format A Summary

Form	Record		
	Header	Detail	Comment
Cover	80[a](1)[b]	25(20)	78(4)
I	90(1)	31(24)	78(4)
II(1)	32(1)	65(24)	
II(2)	32(1)	66(23)	
III	18(1)	59(24)	
IV	32(1)	64(23)	
V(1)	33(1)	66(24)	78(4)
V(2)	23(1)	62(24)	78(4)
VI	38(1)	56(24)	
VII	32(1)	68(24)	
VIII	8(1)	69(32)	
IX	23(1)	44(23)	
X	52(1)	29(23)	78(4)
XI(1)	28(1)	77(23)	78(4)
XI(2)	28(1)	77(23)	78(4)
XII	28(1)	29(23)	78(4)
XIII	10(1)	32(32)	
XIV	38(1)	59(32)	

[a] Length of record in bytes (excluding carriage return/line feed).

[b] Maximum number of records required for a form.

4. Record Listing

The remainder of this section contains detailed specifications for every record required for a full set of hardcopy forms.

COVER PAGE

INORGANIC ANALYSES DATA PACKAGE COVER PAGE HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'COVER'	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-33	25	LAB NAME	CHARACTER
34-43	10	CONTRACT	CHARACTER
44-49	6	LAB CODE	CHARACTER
50-54	5	CASE NUMBER	CHARACTER
55-60	6	SAS NUMBER	CHARACTER
61-66	6	SDG NUMBER	CHARACTER
67-71	5	SOW NUMBER	CHARACTER
72-74	3	ICP INT CORRECTIONS	'YES'/'NO'
75-77	3	ICP BG CORRECTIONS	'YES'/'NO'
78-80	3	RAW DATA BEFORE	'YES'/'NO'/BLANK

NOTE: The LAB NAME, CONTRACT, LAB CODE, CASE NUMBER, SAS NUMBER, AND SDG NUMBER, which are contained in the COVER PAGE HEADER record, are not repeated in the HEADER records of the other forms. Each form's HEADER record contains only data which are unique to the DETAIL records which follow it.

INORGANIC ANALYSES DATA PACKAGE COVER PAGE DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'COVER'	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-15	7	EPA SAMPLE NO.	CHARACTER
16-25	10	LAB SAMPLE ID NO.	CHARACTER

FORM I

INORGANIC ANALYSIS DATA SHEET HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'I '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-15	7	EPA SAMPLE NO.	CHARACTER
16-20	5	MATRIX	'WATER'/'SOIL'
21-30	10	LAB SAMPLE ID	CHARACTER
31-33	3	LEVEL	'LOW'/'MED'
34-41	8	DATE RECEIVED	MM/DD/YY
42-46	5	PERCENT SOLIDS	NUMERIC 3.1
47-51	5	CONCENTRATION UNITS	'UG/L '/ 'MG/KG'
52-60	9	COLOR BEFORE	CHARACTER
61-69	9	COLOR AFTER	CHARACTER
70-75	6	CLARITY BEFORE	CHARACTER
76-81	6	CLARITY AFTER	CHARACTER
82-87	6	TEXTURE	CHARACTER
88-90	3	ARTIFACTS	'YES'/BLANK

INORGANIC ANALYSIS DATA SHEET DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'I '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-22	12	CONCENTRATION	NUMERIC 9.2
23	1	CONC FLAG (C)	'B'/'U'/BLANK
24-29	6	QUALIFIER (Q)	UP TO 6 ONE-CHARACTER FLAGS (OTHER THAN 'B' OR 'U')
30-31	2	METHOD (M)	METHOD CODE/'NR'

FORM II (PART 1)

INITIAL AND CONTINUING CALIBRATION VERIFICATION HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'II(1)'	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-20	12	INIT CAL SOURCE	CHARACTER
21-32	12	CONT CAL SOURCE	CHARACTER

INITIAL AND CONTINUING CALIBRATION VERIFICATION DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'II(1)'	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-17	7	INITIAL CAL TRUE	NUMERIC 5.1
18-25	8	INITIAL CAL FOUND	NUMERIC 5.2
26-30	5	INITIAL CAL %R	NUMERIC 3.1
31-37	7	CONT CAL TRUE	NUMERIC 5.1
38-45	8	CONT CAL FOUND 1	NUMERIC 5.2
46-50	5	CONT CAL %R 1	NUMERIC 3.1
51-58	8	CONT CAL FOUND 2	NUMERIC 5.2
59-63	5	CONT CAL %R 2	NUMERIC 3.1
64-65	2	METHOD (M)	METHOD CODE/'NR'

FORM II (PART 2)

CRDL STANDARD FOR AA AND ICP HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'II(2)'	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-20	12	AA STANDARD SOURCE	CHARACTER
21-32	12	ICP STANDARD SOURCE	CHARACTER

CRDL STANDARD FOR AA AND ICP DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'II(2)'	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-17	7	AA TRUE	NUMERIC 5.1
18-26	9	AA FOUND	NUMERIC 6.2
27-31	5	AA %R	NUMERIC 3.1
32-38	7	ICP INIT TRUE	NUMERIC 5.1
39-47	9	ICP INIT FOUND	NUMERIC 6.2
48-52	5	ICP INIT %R	NUMERIC 3.1
53-61	9	ICP FINAL FOUND	NUMERIC 6.2
62-66	5	ICP FINAL %R	NUMERIC 3.1

FORM III

BLANKS HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'III '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-13	5	PREP BLANK MATRIX	'WATER'/'SOIL '
14-18	5	PREP BLANK UNITS	'UG/L '/'MG/KG'

BLANKS DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'III '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-18	8	INITIAL CAL BLANK	NUMERIC S5.1
19	1	INITIAL CAL FLAG (C)	'B'/'U'/BLANK
20-27	8	CONT CAL BLANK 1	NUMERIC S5.1
28	1	CC BLANK 1 FLAG (C)	'B'/'U'/BLANK
29-36	8	CONT CAL BLANK 2	NUMERIC S5.1
37	1	CC BLANK 2 FLAG (C)	'B'/'U'/BLANK
38-45	8	CONT CAL BLANK 3	NUMERIC S5.1
46	1	CC BLANK 3 FLAG (C)	'B'/'U'/BLANK
47-56	10	PREPARATION BLANK	NUMERIC S5.3
57	1	PREP BLANK FLAG (C)	'B'/'U'/BLANK
58-59	2	METHOD (M)	METHOD CODE/'NR'

FORM IV

ICP INTERFERENCE CHECK SAMPLE HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'IV '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-20	12	ICP ID NUMBER	CHARACTER
21-32	12	ICS SOURCE	CHARACTER

ICP INTERFERENCE CHECK SAMPLE DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'IV '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-16	6	TRUE A	NUMERIC 6
17-22	6	TRUE AB	NUMERIC 6
23-29	7	INITIAL A	NUMERIC S6
30-38	9	INITIAL AB	NUMERIC S6.1
39-43	5	INITIAL %R	NUMERIC 3.1
44-50	7	FINAL A	NUMERIC S6
51-59	9	FINAL AB	NUMERIC S6.1
60-64	5	FINAL %R	NUMERIC 3.1

FORM V (PART 1)

SPIKE SAMPLE RECOVERY HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'V(1) '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-15	7	EPA SAMPLE NO.	CHARACTER
16-20	5	MATRIX	'WATER'/'SOIL '
21-23	3	LEVEL	'LOW'/'MED'
24-28	5	CONCENTRATION UNITS	'UG/L '/ 'MG/KG'
29-33	5	SAMPLE % SOLIDS	NUMERIC 3.1

SPIKE SAMPLE RECOVERY DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'V(1) '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-16	6	CONTROL LIMIT %R	'75-125'/BLANK
17-30	14	SPIKED SAMPLE RESULT	NUMERIC 9.4
31	1	SSR FLAG (C)	'B'/'U'/BLANK
32-44	13	SAMPLE RESULT	NUMERIC 8.4
45	1	SR FLAG (C)	'B'/'U'/BLANK
46-56	11	SPIKE ADDED	NUMERIC 8.2
57-63	7	PERCENT RECOVERED	NUMERIC S4.1
64	1	QUALIFIER (Q)	'N'/BLANK
65-66	2	METHOD (M)	METHOD CODE/'NR'

FORM V (PART 2)

POST DIGEST SPIKE SAMPLE RECOVERY HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'V(2) '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-15	7	EPA SAMPLE NO.	CHARACTER
16-20	5	MATRIX	'WATER'/'SOIL '
21-23	3	LEVEL	'LOW'/'MED'

POST DIGEST SPIKE SAMPLE RECOVERY DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'V(2) '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-16	6	CONTROL LIMIT %R	BLANK
17-28	12	SPIKED SAMPLE RESULT	NUMERIC 9.2
29	1	SSR FLAG (C)	'B'/'U'/BLANK
30-41	12	SAMPLE RESULT	NUMERIC 9.2
42	1	SR FLAG (C)	'B'/'U'/BLANK
43-52	10	SPIKE ADDED	NUMERIC 8.1
53-59	7	PERCENT RECOVERED	NUMERIC S4.1
60	1	QUALIFIER (Q)	BLANK
61-62	2	METHOD (M)	METHOD CODE/'NR'

FORM VI

DUPLICATES HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'VI '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-15	7	EPA SAMPLE NO.	CHARACTER
16-20	5	MATRIX	'WATER'/'SOIL '
21-23	3	LEVEL	'LOW'/'MED'
24-28	5	CONCENTRATION UNITS	'UG/L '/'MG/KG'
29-33	5	SAMPLE % SOLIDS	NUMERIC 3.1
34-38	5	DUPLICATE % SOLIDS	NUMERIC 3.1

DUPLICATES DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'VI '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-17	7	CONTROL LIMIT	NUMERIC 5.1
18-31	14	SAMPLE	NUMERIC 9.4
32	1	SAMPLE FLAG (C)	'B'/'U'/BLANK
33-46	14	DUPLICATE	NUMERIC 9.4
47	1	DUPLICATE FLAG (C)	'B'/'U'/BLANK
48-53	6	RPD	NUMERIC 4.1
54	1	QUALIFIER (Q)	'*'/BLANK
55-56	2	METHOD (M)	METHOD CODE/'NR'

FORM VII

LABORATORY CONTROL SAMPLE HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'VII '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-20	12	SOLID LCS SOURCE	CHARACTER
21-32	12	AQUEOUS LCS SOURCE	CHARACTER

LABORATORY CONTROL SAMPLE DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'VII '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-17	7	AQUEOUS TRUE	NUMERIC 5.1
18-25	8	AQUEOUS FOUND	NUMERIC 5.2
26-30	5	AQUEOUS % RECOVERED	NUMERIC 3.1
31-38	8	SOLID TRUE	NUMERIC 6.1
39-46	8	SOLID FOUND	NUMERIC 6.1
47	1	SOLID FOUND FLAG (C)	'B'/'U'/BLANK
48-55	8	SOLID LOWER LIMIT	NUMERIC 6.1
56-63	8	SOLID UPPER LIMIT	NUMERIC 6.1
64-68	5	SOLID % RECOVERED	NUMERIC 3.1

FORM VIII

STANDARD ADDITION RESULTS HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'VIII '	
6-7	2	FORM SUFFIX	
8	1	'H'	

NOTE: Although there are no fields which occur only once per FORM VIII, the HEADER record must be included as a place holder, indicating that DETAIL records follow.

STANDARD ADDITION RESULTS DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT	
1-5	5	'VIII '		
6-7	2	FORM SUFFIX		
8	1	'D'		
9-15	7	EPA SAMPLE NO.	CHARACTER	
16-17	2	ANALYTE SYMBOL	CHARACTER	
18-22	5	0 ADD ABSORBANCE	NUMERIC 1.3	|
23-28	6	1 ADD CONCENTRATION	NUMERIC 3.2	|
29-33	5	1 ADD ABSORBANCE	NUMERIC 1.3	|
34-39	6	2 ADD CONCENTRATION	NUMERIC 3.2	|
40-44	5	2 ADD ABSORBANCE	NUMERIC 1.3	|
45-50	6	3 ADD CONCENTRATION	NUMERIC 3.2	|
51-55	5	3 ADD ABSORBANCE	NUMERIC 1.3	|
56-62	7	FINAL CONCENTRATION	NUMERIC 5.1	|
63-68	6	CORRELATION COEF (R)	NUMERIC 1.4	|
69	1	QUALIFIER (Q)	'+'/BLANK	|

FORM IX

ICP SERIAL DILUTIONS HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'IX '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-15	7	EPA SAMPLE NO.	CHARACTER
16-20	5	MATRIX	'WATER'/'SOIL '
21-23	3	LEVEL	'LOW'/'MED'

ICP SERIAL DILUTIONS DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'IX '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-22	12	INIT SAMPLE (I)	NUMERIC 9.2
23	1	INIT SAMPLE FLAG (C)	'B'/'U'/BLANK
24-35	12	SERIAL DILUTION (S)	NUMERIC 9.2
36	1	DILUTION FLAG (C)	'B'/'U'/BLANK
37-41	5	PERCENT DIFFERENCE	NUMERIC 3.1
42	1	QUALIFIER (Q)	'E'/BLANK
43-44	2	METHOD (M)	METHOD CODE/'NR'

FORM X

INSTRUMENT DETECTION LIMITS (QUARTERLY) HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'X '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-16	8	DATE	MM/DD/YY
17-28	12	ICP ID NUMBER	CHARACTER
29-40	12	FLAME AA ID NUMBER	CHARACTER
41-52	12	FURNACE AA ID NUMBER	CHARACTER

INSTRUMENT DETECTION LIMITS (QUARTERLY) DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'X '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-17	7	WAVELENGTH	NUMERIC 4.2
18-19	2	BACKGROUND	'BS'/'BD'/'BZ'/BLANK
20-27	8	IDL	NUMERIC 6.1
28-29	2	METHOD (M)	METHOD CODE/'NR'

FORM XI (PART 1)

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY) HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'XI(1)'	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-20	12	ICP ID NUMBER	CHARACTER
21-28	8	DATE	MM/DD/YY

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY) DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'XI(1)'	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-17	7	WAVELENGTH	NUMERIC 4.2
18-19	2	ELEMENT 1 SYMBOL	AL
20-29	10	ELEMENT 1 FACTOR	NUMERIC S1.7
30-31	2	ELEMENT 2 SYMBOL	CA
32-41	10	ELEMENT 2 FACTOR	NUMERIC S1.7
42-43	2	ELEMENT 3 SYMBOL	FE
44-53	10	ELEMENT 3 FACTOR	NUMERIC S1.7
54-55	2	ELEMENT 4 SYMBOL	MG
56-65	10	ELEMENT 4 FACTOR	NUMERIC S1.7
66-67	2	ELEMENT 5 SYMBOL	CHARACTER
68-77	10	ELEMENT 5 FACTOR	NUMERIC S1.7

NOTE: ELEMENTs 1, 2, 3 and 4 SYMBOL can only be AL, CA, FE and MG respectively. ELEMENT 5 Symbol can be any other analyte symbol.

FORM XI (PART 2)

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY) HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'XI(2)'	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-20	12	ICP ID NUMBER	CHARACTER
21-28	8	DATE	MM/DD/YY

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY) DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'XI(2)'	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-17	7	WAVELENGTH	NUMERIC 4.2
18-19	2	ELEMENT 1 SYMBOL	CHARACTER
20-29	10	ELEMENT 1 FACTOR	NUMERIC S1.7
30-31	2	ELEMENT 2 SYMBOL	CHARACTER
32-41	10	ELEMENT 2 FACTOR	NUMERIC S1.7
42-43	2	ELEMENT 3 SYMBOL	CHARACTER
44-53	10	ELEMENT 3 FACTOR	NUMERIC S1.7
54-55	2	ELEMENT 4 SYMBOL	CHARACTER
56-65	10	ELEMENT 4 FACTOR	NUMERIC S1.7
66-67	2	ELEMENT 5 SYMBOL	CHARACTER
68-77	10	ELEMENT 5 FACTOR	NUMERIC S1.7

FORM XII

ICP LINEAR RANGES (QUARTERLY) HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'XII '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-20	12	ICP ID NUMBER	CHARACTER
21-28	8	DATE	MM/DD/YY

ICP LINEAR RANGES (QUARTERLY) DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'XII '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-10	2	ANALYTE SYMBOL	CHARACTER
11-16	6	INTEGRATION TIME	NUMERIC 3.2 (SECONDS)
17-27	11	CONCENTRATION	NUMERIC 9.1
28-29	2	METHOD (M) (ICP IS ASSUMED IF BLANK)	'NR'/BLANK

FORM XIII

PREPARATION LOG HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'XIII '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-10	2	METHOD	METHOD CODE

PREPARATION LOG DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'XIII '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-15	7	EPA SAMPLE NUMBER	CHARACTER
16-23	8	PREP DATE	MM/DD/YY
24-28	5	WEIGHT	NUMERIC 2.2
29-32	4	VOLUME	NUMERIC 4

FORM XIV

ANALYSIS RUN LOG HEADER RECORD:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'XIV '	
6-7	2	FORM SUFFIX	
8	1	'H'	
9-20	12	INSTRUMENT ID NUMBER	CHARACTER
21-22	2	METHOD	METHOD CODE
23-30	8	START DATE	MM/DD/YY
31-38	8	END DATE	MM/DD/YY

ANALYSIS RUN LOG DETAIL RECORDS:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	'XIV '	
6-7	2	FORM SUFFIX	
8	1	'D'	
9-16	8	EPA SAMPLE NUMBER	CHARACTER
17-24	8	DILUTION FACTOR	NUMERIC 5.2
25-28	4	TIME	HHMM
29-35	7	PERCENT RECOVERED	NUMERIC S4.1
36	1	ANALYTE (AL)	"X"/BLANK
37	1	ANALYTE (SB)	"X"/BLANK
38	1	ANALYTE (AS)	"X"/BLANK
39	1	ANALYTE (BA)	"X"/BLANK
40	1	ANALYTE (BE)	"X"/BLANK
41	1	ANALYTE (CD)	"X"/BLANK
42	1	ANALYTE (CA)	"X"/BLANK
43	1	ANALYTE (CR)	"X"/BLANK
44	1	ANALYTE (CO)	"X"/BLANK
45	1	ANALYTE (CU)	"X"/BLANK
46	1	ANALYTE (FE)	"X"/BLANK
47	1	ANALYTE (PB)	"X"/BLANK
48	1	ANALYTE (MG)	"X"/BLANK
49	1	ANALYTE (MN)	"X"/BLANK
50	1	ANALYTE (HG)	"X"/BLANK
51	1	ANALYTE (NI)	"X"/BLANK
52	1	ANALYTE (K)	"X"/BLANK
53	1	ANALYTE (SE)	"X"/BLANK
54	1	ANALYTE (AG)	"X"/BLANK
55	1	ANALYTE (NA)	"X"/BLANK
56	1	ANALYTE (TL)	"X"/BLANK
57	1	ANALYTE (V)	"X"/BLANK
58	1	ANALYTE (ZN)	"X"/BLANK
59	1	ANALYTE (CN)	"X"/BLANK

COMMENT RECORDS

COMMENT records are optional for any FORM ID/FORM SUFFIX group. There may be up to 4 COMMENT records per group. They must come after the DETAIL records and be formatted as follows:

COLUMN(S)	LENGTH	CONTENTS	FORMAT
1-5	5	FORM ID	
6-7	2	FORM SUFFIX	
8	1	'C'	
9-78	70	COMMENTS	FREE FORM TEXT

The text may be in paragraph form if desired, but must be contained in columns 9 through 78 only. The key fields must be repeated in columns 1 through 8 of each line.

SECTION III

FORMAT B SPECIFICATION

1. Introduction

1.1 This constitutes the implementation of the EPA standard for media and record formats to be used in transmission of analytical results for the CLP inorganics program. The following points should be noted:

1.1.1 Spaces between fields permit these records to be prepared by programs written for laboratory automation systems in versions of BASIC which require this feature, as well as to be compatible with Agency standard statistical and database management systems (e.g. SAS, S2K, ADABAS, etc.).

1.1.2 Record formats contain sequence numbers and checksums to be consistent with requirements for a future error-free telecommunications format.

2. Record Types

2.1 There are four groups of record types in the reporting format, as shown below. Detailed record formats follow.

Type	Name	Contents
10	Run Header	Contains information pertinent to the whole production run. See production run definition below.
20	Sample Header	Contains sample-identifying information, or corresponding information for calibrations, QC samples, instrument performance checks, etc.
30	Results Record	Contains any final result on a sample, calibration or QC sample and identifying information.
90	Comments Record	Contains free-form comments and/or other miscellaneous information.

2.2 All record types given are mandatory. Type 20, representing the sample, contains the EPA Sample ID which acts as an identifying label for the sample. The QC code indicates whether the data is from an environmental sample, calibration, or QC sample; or other calculated run-wide data such as instrument detection limits or interelement correction factors (if determined using a separate injection). Type 30, representing an individual analyte, contains an indentifier to identify the analyte. All 30 series records following that record pertain to the same analyte. See section 11 for an example of the sequence of record types.

3. Production Runs

A production run represents a "group" or "batch" of samples that are processed in a continuous sequence under relatively stable conditions. Specifically:

Calibration - All samples in a run use the same initial calibration data.

Method number - Constant.

Instrument conditions - Constant throughout a run. Results obtained on different instruments cannot be combined in one run.

Thus, each separate group of analyses on each instrument will consist of a separate production run, and be reported in a separate file.

4. Record Sequence (See section 11)

4.1 A Run Header (type 10) record must be present as the first record in the file. Further occurrences of the type 10 record in the file are not allowed.

4.2 Each environmental sample, calibration, or quality control sample is represented by a group composed of a type 20 and 21 records, which holds sample level identifying information, followed by one type 30 record for each analyte. The type 20 record holds a count for the number of analytes being determined. Type 20 records should occur in the order of sample analysis. The type 20 records for quality control items have the additional rule that the LD1 record must occur before the corresponding LD2 record, but the records need not be adjacent. In addition, a type 20 record is used as a header for any additional run-wide data that must be reported for each analyte (such as instrument detection limits). Unique identifiers given in section 9.2 are used in place of "QC codes" to indicate the type of data that follows. (Type 30 records for each compound must occur in the order specified on Form 5.)

4.3 Type 90 comment records may be defined to occupy any position except before the type 10 (header) record.

5. File/Record Integrity

All record types must contain the following check fields to ensure file and record integrity:

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type or identifier	"10" or as appropriate
72-74	3	Record sequence number within file	000-999, repeated as necessary
75-78	4	Record checksum	Four hexadecimal digits*; Calculation algorithm to be supplied
79-80	2	Contains CR and LF	

6. Dates and Times

Wherever a date or time-of-day is required, the information consists of successive groups of two decimal digits each, separated by blanks. Dates are given in the order YY MM DD, and times as HH MM. All hours will be given as 0 to 23 using a 24 hour clock and will be local time. Since some computers generating the date and time sequence may have difficulty producing leading zeros, these will not be required.

7. Multiple Volume Data

There is no requirement under this format that all the data from an entire sample delivery group fit onto a single diskette. If a single production run is being split onto multiple diskettes, then it is necessary that all files start with a type 10 record, and that the multiple type 10 records for each file of the same production run be identical. If it is necessary to split the data from a single sample onto multiple diskettes, then the type 20 and following type records for that sample must be repeated. In this situation, it is mandatory that columns 7-30, which collectively identify the sample, be identical in each diskette.

* The checksum is defined to be the sum of the thirty-five (35) INTEGERS that make up the data in columns 1 to 70 when the data is represented in the format 35A2 on processors which store the data bytes in left to right order. The sum is taken modulo 65536 (2^{16}) and represented as four (4) hexadecimal digits. For processors which use an A70 character representation of the data, the checksum is the sum of all the even character position values plus 256 times the sum of all odd character position values.

8.12 Format of the Auxiliary Sample Record (Type 92)

Second Use: To provide additional Sample Descriptive Information.
Position: Follows the type 20(-23) record(s) to which it applies.

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record Type	"92"
3	1	blank	
4-17	14	Lab Sample ID	
18	1	blank	
19-28	10	Color Before	Use entries from Form 1 for each sample.
29	1	blank	
30-39	10	Color After	
40	1	blank	
41-46	6	Clarity Before	
47	1	blank	
48-53	6	Clarity After	
54	1	blank	
55-60	6	Texture	
61	1	blank	
62-67	6	Artifacts	

8. Record Listing

8.1 Format of the mandatory Production Run Header Record (Type 10)

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"10"
3-18	16	blank	
19-21	3	Measurement Type	"ICP", "AA ", or "CN "
22-26	5	blank	
27-30	4	Method Number	Standard method number. See
31	1	blank	sections 9 and 10 for examples
32-34	3	Person responsible for run	3 initials of Manager.
35	1	blank	
36-41	6	Lab ID	From EPA standard list or
42	1	blank	Project Officer
43-50	8	Date Report Prepared	YY MM DD
51	1	blank	
52-61	10	Contract Number	Agency standard number
62	1	blank	
63-68	6	Instrument ID	e.g. AA8312; provided by contract lab; left justified; must be unique and permanent within lab

8.2 Format of the mandatory Sample Header Data Record (Type 20)

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"20"
3-6	4	blank	
7-12	6	EPA Sample No.	Left justified. See below
13-15	3	blank	for calibrations and blanks.
16	1	Sample Medium/Matrix Code	See paragraph 9.3
17	1	blank	
18-20	3	QC code	Codes type of data to be
21	1	blank	reported; (see section 9)
22-24	3	Sample Qualifier	Code to qualify the results of the entire sample
25	1	blank	analysis (see paragraph 9.4.1)
26-30	5	Case number	
31-39	9	blank	
40-47	8	Date of Instrumental Anal.	YY MM DD
48	1	blank	
49-53	5	Hour, Minute of Analysis	HH MM
54-67	14	blank	
68-70	3	Analyte Count	Numeric; 1-3 decimal digits; right justified - gives the number of analytes determined by this method for this sample.

For unknown samples, use the assigned EPA Sample No. Label standards and blanks as follows:

INITIAL CALIBRATION (Form 2A)	ICV
CONTINUING CALIBRATION (Form 2A)	CCV1, CCV2, etc.
AA CRDL STANDARD (Form 2B)	CRA
ICP INITIAL LRA STANDARD (Form 2B)	CRII
ICP FINAL LRA STANDARD (Form 2B)	CRIF
INITIAL CALIBRATION BLANK (Form 3)	ICB
CONTINUING CALIBRATION BLANK (Form 3)	CCB1, CCB2, etc.
PREPARATION BLANK (Form 3)	PB1, PB2
LABORATORY CONTROL SAMPLE (Form 7)	LCS
ICP INITIAL INTERFERENCE CHECK SOLUTION A (Form 4)	ICSAI
ICP INITIAL INTERFERENCE CHECK SOLUTION AB (Form 4)	ICSABI
ICP FINAL INTERFERENCE CHECK SOLUTION A (Form 4)	ICSAF
ICP FINAL INTERFERENCE CHECK SOLUTION AB (Form 4)	ICSABF

8.3 Format of the Sample Header Data Record (Type 21)

Use: Continuation of type 20.
Position: Follows the type 20 to which it applies.

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"21"
3	1	blank	
4	1	Method Variation Code (N)	Codes Flame, Furnace, ICP. See section 10
5	1	blank	
6	1	Concentration level	"L" = low "M" = medium (See note)
7-17	11	blank	
18-23	6	SAS Number	Alphanumeric; left justified
24-36	13	blank	
37-44	8	Date of Beginning of Sample Prep or Preparation of Calibration Solution	YY MM DD
45-47	3	blank	
48-55	8	Date Sample Received at Lab	YY MM DD
56	1	blank	
57-63	7	Source of Analyte (if not unknown sample)	Left justified; company or EPA, that analyte was obtained from (Abbreviated if necessary).

NOTE: The concentration level is an estimate of overall level for all analytes.

8.4 Format of the Sample Conditions Record (Type 22)

Use: Continuation of type 20. Used to describe additional sample conditions.
Position: Follows the type 20 and 21 to which it applies.

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"22"
3-41	39	blank	
42-46	5	Volume in ml	e.g. 1.0 or 0.050
47	1	blank	
48-54	7	Dilution Factor	Right justified; e.g. 2000
55-64	10	blank	
65-70	6	Percent Solids	Right justified

8.5 Format of the Associated Injection and Counter Record (Type 23)

Use: Continuation of type 20. Used to describe holding time.
Position: Follows the type 20 and 21 to which it applies.

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"23"
3-61	59	blank	
62	1	"H"	Identifies holding time in days (as on Form 10).
63	1	blank	
64-65	2	Holding Time	In days - only necessary for Hg and CN.

8.6 Format of the Results Data Record (Type 30)

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"30"
3	1	blank	
4	1	"I"	
5-10	6	blank	
11-14	4	Identifier Code	The Method Code (see section 10) for the specific analyte.
15-25	11	blank	
26-30	5	Units of measure	(Left justified) "MG/KG" for solids; "UG/L " for water; "PERCT" for percent
31	1	blank	
32-34	3	Non-numeric result	See paragraph 9.4.2 also called a result qualifier
35	1	blank	
36-41	6	Numeric analytical result	Right justified; fixed point or scientific notation
42	1	blank or 'E'	Blank field will be interpreted as "+00"
43-45	3	Exponent	
46	1	blank	
47	1	Calculated Value Descriptor	Describes following value (See paragraph 9.5)
48	1	blank	
49-54	6	Related Calculated Value	Value represents amount added or other calculated or theoretical value. Format same as 36-45.
55	1	blank or 'E'	
56-58	3	Exponent	
59	1	blank	
60	1	Limit or QC Value Descriptor	Describes following value (See paragraph 9.6)
61	1	blank	
62-66	5	Related or QC Limit Value	Value of item described above.
67	1	blank or 'E'	
68-70	3	Exponent	

8.7 Format of the Instrumental Data Readout Record (Type 31)

Use: To describe an added concentration and a measured absorbance or concentration value. Used to report data for Method of Standard Additions (Form 8).

Position: Follows type 30.

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"31"
3	1	blank	
4	1	"C"	Indicates Concentration in ug/L
5	1	blank	
6	1	"B" or "C"	Indicates Absorbance (B) or Concentration (C).
7	1	blank	
8	1	Sequence Number	"0" to "3"
9	1	blank	
10-17	8	Concentration Added	(right justified)
18	1	blank	
19-28	10	Absorbance/Concentration Value	up to 10 decimal digits, right justified

8.8 Format of the Auxiliary Data Record (Type 32)

Use: To report wavelength values used for instrument detection limit determinations and integration times for linear range data.

Position: Follows type 30. (Record will only be required for IDLs and LVMs)

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"32"
3-8	6	blank	
9-10	2	"IT" or "IW"	Indicates Integration time (IT) or IDL wavelength (IW)
11	1	blank	
12-21	10	Wavelength or Time Value	Fixed or Scientific notation as in Record Type 30.

8.9 Format of the Correction Data Record (Type 35)

Use: To record ICP interelement correction factor data.
Position: Follows type 30.

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record Type	"35"
3	1	blank	
4-6	3	"ICP"	Indicates ICP interelement correction factors
7-13	7	blank	
14-21	8	Date factor was determined	YY MM DD
22-27	6	blank	
28-31	4	Identifier of interfering element	from Section 10
32	1	blank	
33-40	8	Wavelength value	
41	1	blank	
42-51	10	Correction factor	Use space as in result field on type 30; fixed or scientific notation

8.10 Format of the Comment Record (Type 90)

Use: To provide for Operator Entered Comments
Position: May occur anywhere.

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record Type	"90"
3	1	blank	
4-70	67	Any Comment	

8.11 Format of the Flags Record (Type 91)

Use: To provide for multiple Form 1 Result Qualifier Flags
Position: Immediately follows the type 30 record to which it applies.

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record Type	"91"
3	1	blank	
4-6	3	Second Result Qualifier Flag	See paragraph 9.4.2 for definitions
7	1	blank	
8-10	3	Third Result Qualifier Flag	
11	1	blank	
12-14	3	Fourth Result Qualifier Flag	
15	1	blank	
16-18	3	Fifth Result Qualifier Flag	
19	1	blank	
20-22	3	Sixth Result Qualifier Flag	
23	1	blank	
24-26	3	Seventh Result Qualifier Flag	
27	1	blank	
28-30	3	Eighth Result Qualifier Flag	

9. Definition of Various Codes Used in Format B Records

9.1 Structure of the Method Number and Identifier Code

The method number and identifier code is a four character alphanumeric code which has the form: XXXY

Where: XXX defines one or more target analytes plus the analytical method. This part of the code is identical with the method numbers defined in EPA methods manuals and the code of Federal Regulations. See section 10.

Y is an alphanumeric modifier which specifies that an allowed option in the method has been implemented, or specifies fractions of analytes in the method. For example, Y may distinguish total and dissolved phosphorous measured by the same method, but with or without the optional method filtration. Another use of Y is to label results which have been determined by the Method of Standard Additions.

If Y is not defined in a method, the default value is one.

The method number is validated as ahphanumeric for XXX and Y. It is stored in the four (4) digit number field. Identifier codes are used to identify each metal in a run consisting of more than one metal analysis. It is the same as the method code for a single specific metal.

See section 10 for examples.

9.2 Definition of Various Codes Used

9.2.1 Quality Control and Related Codes (QCC) in Type 20 Records

NOTE: These QCC appear in the QC code fields of type 20 records. They are used to indicate the type of data that are being reported. See section 8.2.

QCC	Name	Definition
LD1	LABORATORY DUPLICATE FIRST MEMBER	The "Sample (S)" from Form 6.
LD2	LABORATORY DUPLICATE SECOND MEMBER	The "Duplicate (D)" from Form 6.
LCB	LABORATORY CALIBRATION BLANK	The Calibration Blank from Form 3.
LRB	LABORATORY (REAGENT) BLANK	The Preparation Blank from Form 3.

QCC	Name	Definition
LCM	LABORATORY CONTROL SOLUTION	The Laboratory Control Sample from Form 7.
LVM	LABORATORY CALIBRATION CRDL VERIFICATION SOLUTION	The samples used for calibration verification, standards, and LRA determinations on Form 2.
LIM	LABORATORY INTERFERENCE CHECK SOLUTION	The ICP interference check sample from Form 4.
LSO	LABORATORY SPIKED SAMPLE BACKGROUND (ORIGINAL) VALUES	The original sample [reported as Sample Result (SR)] from Form 5.
LSF	LABORATORY SPIKED SAMPLE - FINAL VALUES	The spiked sample [reported as Spiked Sample Result (SSR)] from Form 5.
LDO	LABORATORY DILUTED SAMPLE BACKGROUND (ORIGINAL) VALUES	The original sample [reported as Initial Sample Concentration (I)] from Form 9.
LDF	LABORATORY DILUTED SAMPLE - FINAL VALUES	The diluted sample [reported as Serial Dilution Result (S)] from Form 9.
LDX	LABORATORY DOUBLE PURPOSE PRECISION AND ACCURACY SAMPLE	An environmental sample which is used for both the LSO (background level before spike) and LD1 (first member of a duplicate).
IDL	INSTRUMENT DETECTION LIMIT SOLUTION	The solutions used for instrument detection limits as reported on Form 11.
blank		Unknown sample, not associated with any quality control item.

The following QCC values do not refer to actual samples or calibrations for which laboratory results are obtained. Instead they are used on type 20 records which act as a header, and indicate that additional (usually calculated) analyte specific data will be present on type 30 (and following type) records. Usually this data will apply to an entire production run, in which case it will appear immediately following the type 10 record. If the data applies to only a portion of the samples in the run, it should be placed immediately preceding the samples to which it applies. Much of the rest of the information in the type 20 record may be blank, indicating that this data does not apply to these results.

QCC	Name	Definition
SID	SAMPLE INDEPENDENT (i.e. INSTRUMENT) DETECTION LIMITS	The data following represents sample independent detection limits for each compound as reported on Form 11.
ICF	INTER-ELEMENT CORRECTION FACTORS	The data following represents ICP interelement correction factor measurements for each compound as reported on Form 12.
SDR	SPIKE/DUPLICATE CALCULATED RESULTS	The data following represents calculated QC results for the QC samples LD1 and LD2 (percent RSDs), LSO and LSF (percent recoveries), and LDO and LDF (percent D's); or percent recovery for all AA post digestion spikes. Data consist of percent RSDs,percent recoveries, or percent D's for each analyte as reported on Forms 5, 6, 9 and 14.

9.3 Codes For Sample Medium (Matrix, Source)

Medium	Code
All Media, Don't Know or Don't Care.	0
Water	1
Soil	H
Sludge	I

9.4 List of Samples and Result Qualifiers

Definition: A sample qualifier or a result qualifier (also called a non-numeric result) consists of 3 characters which acts as an indicator of the fact and the reason that the subject analysis (a) did not produce a numeric result or (b) produced a numeric result but it is qualified in some respect relating to the type or validity of the result.

9.4.1 Sample Qualifiers (See paragraph 8.2)

Qualifier	Full Name	Definition
BAC	BACKGROUND CORRECTION	Background correction has been applied to this group of values.
BEF	BEFORE	Labels ICP corrections that were applied before generating raw data; or spiked samples (LSF) that were spiked prior to method-defined digestion (Form 5A).
AFT	AFTER	Labels ICP corrections that were applied after generating raw data; or spiked samples (LSF) that were spiked after method-defined digestion (Form 5B).
PDS	POST DIGESTION SPIKE	Labels furnace AA post digestion spike percent recovery data (from Form 14), and also indicates that measured results from the spiked analysis will not be present and the sample results will be reported using QC codes appropriate to non-spiked samples.

9.4.2 Result Qualifiers (See paragraph 8.6)

Qualifier	Full Name	Definition
BDL	BELOW DETECTABLE LIMITS	Indicates analyte was analyzed for but not detected; ignore value (Form 1 "U" Flag).
NAR	NO ANALYSIS RESULT	There is no analysis result required for this subject parameter (Form 1 "NR" Flag).
FQC	FAILED QUALITY CONTROL	The analysis result is not reliable because control limits were exceeded when the analysis was conducted. Value is estimated. (Form 1 "M", "W", "N", "*", or "+" Flags).
LLS	LESS THAN LOWER STANDARD	The analysis value is less than the contract required detection limit (Form 1 [ ] value).
EST	ESTIMATED VALUE	Indicates a value estimated or not reported due to presence of interference (Form 1 "E" Flag).
MSP	PERCENT RECOVERY	The following value represents the percent recovery for the spiked sample.
DPD	PERCENT DIFFERENCE	The following value represents the percent difference of the dilution result from the original.
DPR	PERCENT RSD	The following value represents the percent RSD of the duplicate results.

9.5 **Calculated Value Descriptors (See paragraph 8.6)**

These codes appear in column 47 to identify the value in columns 49-58.

Qualifier	Full Name	Definition
F	AMOUNT ADDED	Identifies the amount of matrix spike analyte added (for QC code "LSF").
T	TRUE VALUE	Indicates the true value for each analyte (for QC codes "LCM", "LVM", and "LIM").

9.6 Limit or QC Value Descriptors (See paragraph 8.6)

These codes appear in column 60 to identify the value in columns 62-70.

Qualifier	Full Name	Definition
U	UNDETECTED	Value is the corrected sample quantitation limit (Form 1 "U" Value).
P	PERCENT RECOVERY	Value is the Percent Recovery for each compound (for QC codes "LCM", "LVM", and "LIM").
C	CORRELATION COEFFICIENT	Value is the correlation coefficient (r) for any result obtained by the Method of Standard Additions (last digit of identifier is "2").
L	CONTROL LIMIT	Value is CRDL value from Form 6 if present (for QC code "SDR").

10. Example Method and Matrix Codes for Inorganic Methods

The codes given below are examples of method number designations for inorganic analyses. In all of these, the Z position refers to the matrix code and should be interpreted with the aid of paragraph 9.3. The generic value of 1, which represents water, type unknown or not specified", is used for water analysis.

Solid samples are represented by two specific codes, with Z values of H (soil) and I (sludge).

Each method code shown occurs in a type 10 record and acts as the header for the appropriate list of compounds.

XXX	Y	N	Z	Definition
200	4	1	1	Generic code for analysis of total metals in water, after method-defined digestion, by atomic absorption, flame.
200	4	2	1	Generic code for analysis of total metals in water, after method-defined digestion, by atomic absorption, furnace.
200	4	7	1	Generic code for analysis of total metals in water, after method-defined digestion, by ICP

For specific matrix codes, replace Z with the specific value for the type of sample (from paragraph 9.3). For Method Identifiers (see section 8.6), replace XXX with value for the analyte. Change Y to 2 if the value was determined by the Method of Standard Additions (Form 1 "S" Flag). Each identifier shown occurs in a type 30 record and identifies the specific compound.

202	Aluminum
204	Antimony
206	Arsenic
208	Barium
210	Beryllium
213	Cadmium
215	Calcium
218	Chromium
219	Cobalt
220	Copper
236	Iron
239	Lead
242	Magnesium
243	Manganese
249	Nickel
258	Potassium
270	Selenium
272	Silver
273	Sodium
279	Thallium
282	Tin
286	Vanadium
289	Zinc

NOTE: Exception to above:

XXX	Y	N	Z	Definition
245	1	1	1	Analysis of mercury in water by the manual cold vapor technique
245	1	2	1	Analysis of mercury in water by the automated cold vapor technique

XXX	Y	N	Z	Definition
245	4	5	H	Analysis of mercury in soil, after method-defined digestion, by the manual cold vapor technique
245	4	5	I	Analysis of mercury in sludge, after method-defined digestion, by the manual cold vapor technique
335	1	2	1	Analysis of total cyanide in water by titrimetric, manual spectrophotometric, or semi-automated spectrophotometric means

NOTES:

1. See paragraph 9.1 for the structure of "XXX" and "Y"

2. If multiple metals are analyzed as part of a single production run, the method code (paragraph 8.1) is "2004". If only a single metal is analyzed, then use the value for that metal (i.e. "2064" for arsenic). In all cases the identifier in paragraph 8.6is a specific code given in Section 10.

3. The values of "N" and "Z" are sample dependent and may vary within a production run. They are reported on type 20 and 21 records (paragraphs 8.2 and 8.3)

NOTE: Exception to above:

XXX	Y	N	Z	Definition
245	1	1	1	Analysis of mercury in water by the manual cold vapor technique
245	1	2	1	Analysis of mercury in water by the automated cold vapor technique

XXX	Y	N	Z	Definition
245	4	5	H	Analysis of mercury in soil, after method-defined digestion, by the manual cold vapor technique
245	4	5	I	Analysis of mercury in sludge, after method-defined digestion, by the manual cold vapor technique
335	1	2	1	Analysis of total cyanide in water by titrimetric, manual spectrophotometric, or semi-automated spectrophotometric means

NOTES:

1. See paragraph 9.1 for the structure of "XXX" and "Y"

2. If multiple metals are analyzed as part of a single production run, the method code (paragraph 8.1) is "2004". If only a single metal is analyzed, then use the value for that metal (i.e. "2064" for arsenic). In all cases the identifier in paragraph 8.6 is a specific code given in Section 10.

3. The values of "N" and "Z" are sample dependent and may vary within a production run. They are reported on type 20 and 21 records (paragraphs 8.2 and 8.3)

11. Example of the Sequence of Record Types in a Production Run

10		Contains Run Header information
20		Occurs once for each sample, calibration, calculated QC results, instrument detection limits, etc. - Acts as a header.
	21	Will usually be present
	22	Contains additional information for samples
30		Occurs once for each final analytical result. Will give whatever value is being determined as defined by the type 20.
	31	Reports any instrumental data necessary
	32	Reports any auxiliary data necessary
	35	Reports corrections to results if necessary
30		Values for the next analyte or parameter being measured.
	31	Additional data may vary for each parameter, and records
	32	may occur in any order. Multiple occurrences of the
	32	same record type, however, must be consecutive.
	35	
30		Continues for as many as are necessary
	31	
	32	
	35	
30		
	31	
	32	
	35	
20		Next Sample Header record - The following applies to the next
	21	sample or other group of data.
	22	
30		
	31	
	32	
30		
	31	
	32	etc.
20		
	21	
30		
	31	
	32	
		etc.

12. Format of Records for Specific Purposes

12.1 Format of the Sample Header Data Record (Type 20) for Linear Range Analysis

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"20"
3-6	4	blank	
7-10	4	"CRF" or "CRF"	To indicate initial or final
11-15	5	blank	
16	1	"0"	No matrix code
17	1	blank	
18-20	3	"LVM"	See paragraph 9.2
21-25	5	blank	
26-30	5	Case number	
31-39	9	blank	
40-47	8	Date of Instrumental Anal.	YY MM DD
48	1	blank	
49-53	5	Hour, Minute of Analysis	HH MM
54-67	14	blank	
68-70	3	Analyte Count	Numeric; 1-3 decimal digits; right justified - gives the number of analytes determined by this method for this sample.

12.2 Format of the Sample Header Data Record (Type 21) for Linear Range Analysis

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"21"
3	1	blank	
4	1	"7"	Codes ICP. See Section 10
5-17	13	blank	
18-23	6	S A S Number	Alphanumeric; left justified
24-36	13	blank	
37-44	8	Date of Preparation of Calibration Solution	YY MM DD
45-56	12	blank	
57-63	7	Source of Analyte	Left justified; company or EPA, that compound was obtained from (abbreviated if necessary).

12.3 Format of the Results Data Record (Type 30) for Linear Range Analysis

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"30"
3	1	blank	
4	1	"I"	
5-10	6	blank	
11-14	4	Identifier Code	The Method Code (section 10) for the specific compound.
15-25	11	blank	
26-29	4	"UG/L"	Units
30-35	6	blank —	
36-41	6	Found Value	Right justified; fixed point or scientific notation.
42	1	blank or 'E'	
43-45	3	Exponent	
46	1	blank	
47	1	"T"	Indicates true value See paragraph 9.5
48	1	blank	
49-54	6	True Value	Format same as 36-45.
55	1	blank or 'E'	
56-58	3	Exponent	
59	1	blank	
60	1	"P"	Indicates percent recovery See paragraph 9.6
61	1	blank	
62-66	5	Percent Recovery	
67	1	blank or 'E'	
68-70	3	Exponent	

12.4 Format of the Auxiliary Data Record (Type 32) for Linear Range Analysis (only for quarterly submissions)

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"32"
3-8	6	blank	
9-10	2	"IT"	Indicates Integration time
11	1	blank	
12-21	10	Integration Time Value	Fixed or Scientific notation

12.5 Format of the Sample Header Data Record (Type 20) for Duplicate Data

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"20"
3-6	4	blank	
7-12	6	EPA Sample ID	Left justified
13-15	3	blank	
16	1	Sample Medium/Matrix Code	See paragraph 9.3
17	1	blank	
18-20	3	"SDR"	Identifies calculated QC results
21-25	5	blank	
26-30	5	Case number	
31-67	37	blank	
68-70	3	Analyte Count	Numeric; 1-3 decimal digits; right justified - gives the number of analyte determined by this method for this sample.

12.6 Format of the Sample Header Data Record (Type 21) for Duplicate Data

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"21"
3	1	blank	
4	1	Method Variation Code (N)	Codes flame, furnace, ICP. See section 10
5	1	blank	
6	1	Concentration level	"L" = low "M" = medium
7-17	11	blank	
18-23	6	SAS Number	Alphanumeric; left justified

12.7 Format of the Results Data Record (Type 30) for Duplicate Data

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"30"
3	1	blank	
4	1	"I"	
5-10	6	blank	
11-14	4	Identifier Code	The Identifier Code (section 10) for the specific compound.
15-25	11	blank	
26-30	5	"PERCT"	Units are percent
31	1	blank	
32-34	3	"DPR"	Indicates Duplicate %RSD
35	1	blank	
36-41	6	Duplicate Percent RSD	Right justified; fixed point or scientific notation.
42	1	blank or 'E'	
43-45	3	Exponent	

12.8 Format of the Sample Header Data Record (Type 20) for Continuing Checks

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"20"
3-6	4	blank	
7-10	4	"CCV1" "CCV2" etc	To indicate which check
11-15	5	blank	
16	1	"0"	All matrices
17	1	blank	
18-20	3	"LVM"	See paragraph 9.4.1
21-25	5	blank	
26-30	5	Case number	
31-39	36	blank	
40-47	8	Date of Instrumental Anal.	YY MM DD
48	1	blank	
49-53	5	Hour, Minute of Analysis	HH MM
54-67	14	blank	
68-70	3	Analyte Count	Numeric; 1-3 decimal digits; right justified - gives the number of analytes determined by this method.

12.9 Format of the Sample Header Data Record (Type 21) for Continuing Checks

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"21"
3	1	blank	
4	1	Method Variation Code (N)	Codes Flame, Furnace, ICP.
5-17	13	blank	See Section 10
18-23	6	S A S Number	Alphanumeric; left justified
24-36	13	blank	
37-44	8	Date of Preparation of Calibration Solution	YY MM DD
45-56	12	blank	
57-63	7	Source of Analyte	Left justified; company or EPA, that analyte was obtained from.

NOTE: The Results Data Record (Type 30) for Continuing Checks is identical to that for Linear Range Data. See paragraph 12.3. Record type 32 is not present.

12.10 Format of the Results Data Record (Type 30) for an Unknown Sample when the Method of Standard Additions was used.

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"30"
3	1	blank	
4	1	"I"	
5-10	6	blank	
11-14	4	"2XX2"	See Section 10 "XX" values. Last character is a "2".
15-25	11	blank	
26-30	5	Units of-measure	"MG/KG" for solids; "UG/L " for water.
31	1	blank	
32-34	3	Non-numeric result	See paragraph 9.4.2; also called a result qualifier
35	1	blank	
36-41	6	Numeric analytical result	Right justified; fixed point or scientific notation
42	1	blank or 'E'	
43-45	3	Exponent	
46	1	blank	
47	1	Calculated Value Descriptor	Describes following value See paragraph 9.5
48	1	blank	
49-54	6	Related Calculated Value	Format same as 36-45. (Only present if spiked sample)
55	1	blank or 'E'	
56-58	3	Exponent	
59	1	blank	
60	1	"C"	Indicates correlation coefficient.
61	1	blank	
62-66	5	r* value	Give value from Form 8 for each analyte determined.
67	1	blank or 'E'	
68-70	3	Exponent	

NOTE: Following each type 30 record where the Method of Standard Additions was used will be four type 31 records (see paragraph 8.7). Each contains data for one of the four additions.

12.11 Format of the Sample Header Data Record (Type 20) for Post Digestion Spike Data

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"20"
3-6	4	blank	
7-12	6	EPA Sample ID	Left justified
13-15	3	blank	
16	1	Sample Medium/Matrix Code	See section 9.3
17	1	blank	
18-20	3	"SDR"	Identifies calculated QC results
21	1	blank	
22-24	3	"PDS"	Label this as post digestion spike data.
25	1	blank	
26-30	5	Case Number	
31-67	37	blank	
68-70	3	Compound Count	Numeric; 1-3 decimal digits; right justified - gives the number of compounds determined for this sample.

12.10 Format of the Results Data Record (Type 30) for Post Digestion Spike Data

Record Position	Field Length	Field Contents	Remarks
1-2	2	Record type	"30"
3	1	blank	
4	1	"I"	
5-10	6	blank	
11-14	4	Identifier Code	The Identifier Code (see section 10) for the specific compound
15-25	11	blank	
26-30	5	"PERCT"	Units are percent
31	1	blank	
32-34	3	"MSP"	Indicates Percent Recovery
35	1	blank	
36-41	6	Percent Recovery	Right justified; fixed point or scientific notation
42	1	blank or "E"	
43-45	3	Exponent	